Minutes of the Social Meetings,

1883-1884.

FIRST SOCIAL MEETING.

Hall of the Philadelphia College of Pharmacy,
No. 145 N. 10th Street,
Tuesday afternoon, Oct. 9th, 1883.

The first Social Meeting of the Alumni Association for the course of 1883–84, was held this afternoon in the Museum of the College, with an attendance of eighty members and students.

The President, Mr. L. E. Sayre, called the meeting to order at 3.05 P. M., with a few appropriate remarks urging the co-operation of the students and others present in maintaining these Social Meetings during the present course.

He then called upon the First Vice-President, Dr. C. A. Weidemann, to take the chair, after which Mr. Sayre introduced Prof. P. D. Bedford, who was present, to come forward and make a few remarks. Prof. Bedford congratulated the Association upon the bright prospects before it, and of the large attendance at this, the First Social Meeting, and counseled the students to make the best use of their time, and with the guidance of such Teachers and Quiz Masters they would certainly make competent men.

The Vice-President informed those present that Prof. Bedford is Professor in the New York College of Pharmacy, and it would be well for them to heed his advice.

The Chair then introduced Mr. L. E. Sayre, the President of the Association, who read a paper entitled "Good and Bad Penmanship," which was full of good advice to those who are called upon to write directions on labels for prescriptions, and was listened to attentively by those present.

The Chair then introduced Prof. Henry Trimble. By request of the Vice-President the President, Mr. Sayre, then took the chair.

Mr. Trimble gave an interesting account of his recent trip to England, France and Germany, with a synopsis of his Pharmaceutical Notes, which was highly appreciated by the audience. The President then introduced Miss F. Lizzie Pierce, who gave a recitation, the "Traveled Parson," which was enthusiastically encored, in response to which she recited a negro dialect, which was received with great applause.

The President then made a few remarks, and introduced Mr. Louis Genois of the Class 1881, who gave a humorous and interesting account of his "Travels in Foreign Lands," which was well received by those present.

The President then stated that he had a few remarks to make before the audience retired, and hoped Mr. Genois would favor us at some future meeting with his impressions of Paris. He also called attention of the students present, to the Query box which they would find hanging in the Actuary's room, for the purpose of receiving questions to be debated upon, or talked over at our Social Meetings. The queries can be placed in the box any time during the month and opened at the meetings. In that way we can make the Social Meetings interesting to all.

Dr. A. W. Miller stated that a few days ago, he had the opportunity of obtaining a by-product in the manufacture of Grape Sugar from Indian Corn, and produced a specimen of a dark colored oil, and thought perhaps it might be a subject that some member of the present class might be anxious to take up. The gentlemen who are manufacturing this are desirous to find some use for the article.

Dr. Miller stated that he thought that we all had so thoroughly enjoyed the recitations of Miss Pierce, that we could not better close the meeting, than by asking her to give another selection.

Miss Pierce then gave a recitation, which was very much enjoyed by those present.

Mr. Wallace Procter moved that a vote of thanks be extended to those who have contributed so much to our enjoyment this afternoon. The motion was duly seconded, and unanimously carried.

The meeting then adjourned, to meet the second Tuesday in November.
Attest,

WM. E. KREWSON, *Secretary.*

SECOND SOCIAL MEETING.

Hall of the Philadelphia College of Pharmacy,
No. 145 N. 10th Street,
Tuesday afternoon, Nov. 13th, 1883.

The Second Social Meeting under the auspices of the Alumni Association, was held this afternoon in the Museum of the College, with eighty-five members, students and friends of the Alumni present.

The meeting was called to order at 3½ P. M., by the First Vice-President, Dr. Chas. A. Weidemann, who occupied the Chair.

The reading of the minutes of the last Social Meeting, were called for, when upon motion of the Secretary, the reading of the minutes were dispensed with.

The Chairman then introduced Dr. Frank E. Stewart, Ph. G., of the Class 1876, who read an exceedingly interesting paper on "The Relation of Pharmacy to Therapeutics," which was listened to throughout the entire reading with rapt attention, and at its conclusion was received with a great deal of applause.

After the conclusion of the reading of the paper, Dr. Miller stated that we had listened with a great deal of pleasure and satisfaction, to the paper of Dr. Stewart, and as there were so many points of vital importance, touching the subject of therapeutics, and also, so many suggestions made, that he thought they were well worthy of discussion.

The Chair then invited those present to speak upon the subject. On motion of Dr. A. W. Miller, strangers were invited to participate in the discussion.

A discussion then took place upon the subject, participated in by Dr. A. W. Miller, Mr. L. E. Sayre, Dr. Lawrence Turnbull, and others, after which Mr. Sayre stated that he understood, that Mr. Louis Genois could not be with us this afternoon, whereupon the Secretary read the following note, from Mr. Genois:

Philadelphia, Nov. 12th, 1883.

WM. E. KREWSON, ESQ.

MY DEAR SIR:—Thanks for programme forwarded to me, but am sorry to say, that owing to pressure of business, I will be unable to continue my notes on European Travel, everything concerning my trip is in a state of confusion, from which I fear I cannot extract order.

Very truly yours,
LOUIS GENOIS.

Dr. A. W. Miller then introduced Mr. Thos. H. McCool, the pen artist, an elocutionist, who gave a reading entitled "The School Master Beaten," which was received with great applause, and being encored he gave a recitation entitled "How Ruby Played."

This was received with prolonged applause.

Dr. Miller then moved that a vote of thanks be extended to Dr. Stewart and Mr. Thos. H. McCool for their pleasing and profitable entertainment this afternoon, which was duly seconded and unanimously carried.

Dr. Miller then introduced Dr. Wm. MacIntosh, who read a very interesting paper on "A Case of Poisoning by Aqua Ammoniæ," and his treatment of the patient.

The Chairman stated that he was asked to announce to those present that the Alumni had purchased a box which could be found in the Actuary's room for the reception of queries.

There was one found in it, which he was disposed to ask the audience to answer for themselves.

The query is: "Are these meetings any good?"

Dr. Miller said that he thought this question should be answered by every one for himself, and that it was a question that could not be discussed very well, as there might be a difference of opinion upon the subject, and each one ought to answer the question without calling upon his neighbor.

The Vice-President stated that we would be pleased to receive queries that they may be presented for discussion.

Dr. Miller called attention to and exhibited a specimen of a plant collected in the West called Loco Plant.—*Astralagalus Mollissimus.*

Dr. Miller then moved that the General Government be recommended to establish a school or department of investigation, under the name of Pharmacology, as recommended by Dr. Stewart's paper. The motion was adopted.

The Chairman called the attention of those present to the signing of the Roster before retiring, and also stated that the next meeting would be held on Tuesday afternoon, December 11th, 1883, when Dr. Henry Formad would give an illustrated lecture on the most recent investigations in relation to the "Germ Theory of Disease."

There being no further business, on motion the meeting adjourned.

Attest,
WILLIAM E. KREWSON, *Secretary.*

THIRD SOCIAL MEETING.

Hall of the Philadelphia College of Pharmacy,
No. 145 N. 10th Street,
Tuesday afternoon Dec. 11th, 1883.

The Third Social Meeting of the Alumni Association of the Philadelphia College of Pharmacy of the Series of 1883 and '84, was held this afternoon in the Museum of the College.

The meeting was called to order at 3.10 P. M. by the President, Mr. Lucius E. Sayre, with one hundred and thirty-four members, students and visitors present.

The reading of the minutes of the last meeting were omitted.

The President opened the meeting with the following remarks: "Since my connection with the Alumni Association, I do not know that there has been a time when I could say that there has seemed to be so great an evidence of prosperity as we have at the present time. The attendance at these meetings is an evidence that the Association, although working for many years, is at last reaping some reward. The object you all know of the Alumni Association is to entertain the students during their sojourn in Philadelphia. We wish monthly to give these recreations and to develop social intercourse between them, that they may become better acquainted with each other, and with ourselves, that when they go away and leave us, it may be with a good impression."

The President further stated that the Alumni Association had recently instituted what was known as the Query Box. At the last meeting we had one query, and at this meeting we have several, as follows:

Query 1st.

Fluid Ext. Eucalyptus, ℥i.
Sulphate of Cinchonidia, ʒss.
Fluid Ext. Wahoo, ℥i.
Syrup Wild Cherry, ℥ij.

Mistura:—In filling the above prescription I got a precipitate. 1st. Can that precipitate be avoided? 2d. Is the precipitate inert? 3d. I get the same precipitate by the addition of one fluid drachm of the Tincture of Iodine, which makes matters worse.

At the request of the President the above was placed upon the Board, and it would be answered later in the afternoon.

Query 2d. "How would Calomel be formed by adding Corrosive Sublimate and Iodide of Potassium to Syr. Sarsaparilla Comp.?"

Query 3d. "What are the uses to which Jequirity seed are put to in medicine? What is the best way to make a preparation from it for use?"

Query 4th. "What are the component parts of McDade's Formula?"

The President stated that the above queries would be answered later in the afternoon.

The President then announced that we had present with us a distinguished gentleman, who had promised to give us a lecture, and he had no doubt that those present had looked forward to this time with considerable pleasure, and that he would call upon Dr. A. W. Miller to introduce Dr. Formad. Dr. Miller then introduced Dr. Henry Formad of the University of Pennsylvania, Demonstrator of Pathological Anatomy in the University, stating that it was probably known to most of those present that Dr. Formad had spent the whole of his vacation studying up his special branch, that in which he is interested. He has visited Virchow and Koch, and has taken every possible means to become indoctrinated with their peculiar views, but Dr. Formad informed him that he has not been entirely brought over to his views. Dr. Koch is the one having discovered the cause of consumption.

Dr. Henry Formad then addressed the audience, and thanked them for the honor they had conferred upon him. After which he gave an interesting illustrated lecture on the "Germ Theory of Disease," which was attentively listened to, and at its close the Doctor received great applause.

The President then stated that Miss F. Lizzie Pierce was present with several of her young lady pupils, and invited her to delegate one of them to give a recitation.

Miss Louisa Nagel then came forward and recited a "Scene from Leah the Forsaken," which was greatly applauded.

The President then made some interesting remarks in regard to the manufacture of Peptone.

An interesting discussion now took place in reference to several points in the lecture delivered by Prof. Formad, which was participated in by the President, Prof. Formad, Dr. L. Turnbull and Dr. Miller.

Miss Sally A. Gesemyer then gave a recitation entitled "A Modern Sermon" on the text "Old Mother Hubbard went to the cupboard to get her poor dog a bone, but when she got there the cupboard was bare, and so the poor dog had none." This was received with tremendous applause.

The President then called attention to the queries which were presented early in the meeting, and answers and explanations were given in each case.

Miss F. Lizzie Pierce then favored the meeting with Tennyson's Bugle Song, which was received with great applause.

On motion, the thanks of the Association were tendered to Prof. Formad and Miss F. Lizzie Pierce and her pupils for the entertainment they had afforded the meeting during the afternoon, which was unanimously carried.

The President then announced that the Fourth Social Meeting would take place in this room on the 8th of January, 1884, at which Prof. Henry Leffmann, M. D., would give an interesting lecture on "Mineralogy of Philadelphia as illustrated by the Microscope."

There being nothing further, on motion the meeting adjourned.

Attest,
WM. E. KREWSON, *Secretary*.

FOURTH SOCIAL MEETING.

Hall of the Philadelphia College of Pharmacy,
No. 145 N. 10th Street,
Philadelphia, Jan. 8th, 1884.

The fourth of the Social Meetings of the Alumni Association, for the course of 1883–84, was held this afternoon in the Museum of the College.

The meeting was called to order by the President, Mr. L. E. Sayre, at 3.15 o'clock, P. M.

The reading of the minutes of the last meeting were omitted.

The President read three queries which were found in the Alumni Box, and deferred the answers until later in the meeting.

He then introduced Prof. Henry Leffmann, who delivered an interesting lecture on "Mineralogy of Philadelphia as illustrated by the Microscope."

The lecture was attentively listened to and appreciated by those present.

A recess was now taken to allow those present to view the microscopical specimens of minerals.

After a recess of half an hour Prof. Leffmann and Dr. Miller spoke upon the above subject.

The President then introduced Prof. Stephen L. Adams, the elocutionist, who recited the "Little Stowaway," which was feelingly rendered, and appreciated by the audience.

Dr. A. W. Miller then read an article from the St. Louis Druggist, entitled "The Prospects of the Patent Medicine Trade." After which he read a paper bearing upon the same subject, called "Retail Prices of Patent Medicines."

A discussion was then had upon the papers read, participated in by Mr. Wm. W. Kneeshaw, Mr. L. E. Sayre and Dr. A. W. Miller and others, which was quite interesting and instructive. Prof. S. L. Adams then recited "The Rhyming Apothecary," which was loudly applauded.

The President then announced that the Fifth and last Social Meeting of the course would be held on Tuesday afternoon, February 12th, 1884, at 3 P. M., when Dr. J. M. Anders, Ph. D., would deliver an interesting lecture on "The Relation of Plants to Hygiene," and he hoped that all present this afternoon would be present upon that occasion. The queries were then answered by the President. Mr. David W. Ross moved that a vote of thanks be extended to Prof. Henry Leffmann, M. D., for his highly interesting and instructive lecture, and to Prof. Stephen L. Adams for the well rendered recitations he had given this afternoon. The motion was duly seconded and unanimously carried.

There being nothing further the meeting adjourned.

Attest,
Wm. E. Krewson, *Secretary.*

FIFTH SOCIAL MEETING.

Hall of the Philadelphia College of Pharmacy,
No. 145 No. 10th Street,
Philadelphia, Tuesday, Feb. 12th, 1884.

The Fifth and last Social Meeting of the Alumni Association for 1883-84, was held this afternoon in the Museum of the College, with ninety-two students, members and friends of the Alumni in attendance.

The meeting was called to order by the President, Lucius E. Sayre, Ph. G., at 3.20, P. M. He said it was hardly necessary to state to the audience, as they had already received the information through the circular which had been distributed to each one, that this was the last of the Social Meetings for this course, and that it was with much pleasure that he introduced Dr. J. M. Anders, Ph. D., to the audience. Dr. Anders then delivered an exceedingly interesting and instructive lecture on "The Relation of Plants to Hygiene," based upon his own investigations. The lecture was listened to with marked attention by the audience, and at its conclusion was greatly applauded.

After the conclusion of the lecture a discussion took place upon the subject, which was participated in by Dr. Miller, Dr. J. M. Anders, Wallace Procter, the President and others.

The President then called the attention of those present to the work of the Association, and stated that during the Summer we would have a class in microscopy for those whose time was so much occupied during the past Winter, and requested those present to speak to the Juniors who wish to commence their Thesis during the Summer, that they would have very valuable assistance in Mr. Albert P. Brown, who conducts this course of instruction.

The President then called upon Miss Kate Pigott, B. E., graduate of the National School of Elocution and Oratory, who came forward and favored the audience with a recitation entitled "Awfully Lovely Philosophy," which was vigorously applauded by those present, and which was so highly appreciated that she again came forward and recited the "Briar Rose," which was likewise well rendered.

(Dr. A. W. Miller referred to the last mentioned recitation.) Said, it may not perhaps be generally known that the poem we have just heard recited so beautifully was written by a naturalized citizen of this country, a native Norwegian, Hjalmar Hjorth Boyesen, and was transcribed not in his mother tongue, but in English, and exactly in the words which we have heard. I think you will all agree with me in regarding it as very good English indeed.

The scene therein depicted so vividly reminds me of an evening I spent in the company of a Consul of Sweden and Norway, who stated at that time that his daughter had just written to him that her two months' experience in Norway she would always regard as the most pleasant of her life. I believe it is considered to be the fashionable thing in England to go up into Sweden and Norway during the Summer, and spend a couple of months there, as has been so often described by travelers.

The questions from the Query Box were now taken up, the first as follows: "How would you confirm suspicion in regard to a mixture supposed to contain Fluid Extract of Ergot, Tincture of Iron and Aromatic Sulphuric Acid."

The second query was "What is the Emulsifying Property of Pancreatin—to what extent will it emulsify fats?"

The above queries provoked quite a good deal of discussion.

Dr. A. W. Miller said he had been requested by Mr. Jones to call the attention of the students to the prize offered to the student making the best collection of botanical specimens during the Summer. The prize consists of a certificate, and is confined to botanical specimens that are medicinal in their character.

Mr. Wallace Procter called attention to a prescription containing equal parts of Borax and Bicarb. Soda, Glycerine and water, which upon being added together there was a violent reaction and effervescence.

The President then brought up the subject of Jequirity seeds, which had been under discussion at a former meeting, and inquired whether there was a specimen of those seeds in the Cabinet. Quite an interesting discussion now took place, in which the history of the seed was given by the President, and Dr. Miller spoke about it being used in the treatment of various inflammatory diseases of the eye, and that Dr. Charles Turnbull had obtained some very gratifying results by the infusion of the seeds.

Dr. Miller showed some relics of antiquity in the form of cards, which were originally packed inside of chests of the so-called provision opium of India made for the Chinese market. These cards date back to 1842 and 1843, and bear the names of the different government factories in which they were produced; one situated in Patna, and the other in the Holy City of Benares in India. The cards were passed around for general inspection.

Miss Kate Pigott, upon the suggestion of Dr. Miller, again came forward and entertained the audience by a spirited recitation of the story of "Schlossenheimer's Alarm Clock," which was greatly applauded.

Dr. A. W. Miller moved that a vote of thanks be tendered to Miss Pigott and Dr. J. M. Anders, who had so kindly entertained the Association this afternoon. The motion was seconded and unanimously agreed to.

Dr. Chas. A. Weidemann moved, as this was the last Social Meeting for the present course, that a vote of thanks be tendered to the Committee on Social Meetings, who have been instrumental in getting up these entertainments for the last five months. Carried unanimously.

Mr. Jones, in response to a request from the President, announced the usual prizes that are annually given to the best students in the various branches, viz.: Gold medal to the A No. 1 of the class; also certificates for the best students in the branches of Chemistry, Pharmacy, Materia Medica, General Pharmacy, Pharmaceutical Manipulations, and this year an additional certificate to the best student in Analytical Chemistry. A certificate as a testimonial to the best Junior Student. He further stated that he hoped they would all be received this year, which was received with applause.

Dr. Miller stated that he had met with Dr. Reichert this morning, and was informed by him that he had been making investigations in regard to the poison by rattlesnakes and other venemous serpents.

The results of these investigations will probably be published by the Smithsonian Institute, as his investigations are done mainly for this institution. He called the students' attention to this, thinking that they might feel an interest in a work of like character.

The President suggested that the Association would no doubt assist any of the students who desired to take part in the investigations referred to.

The President also called attention to the fact that the Alumni Association had under consideration the propriety of asking the class each year to provide a Class Historian, whose duty it shall be to give the history of the class for the two years during the attendance at College, which would doubtless add much interest to the Annual Reception to the Graduating Class.

After thanking the audience for their attendance at the Social Meetings during the Winter, which have been so successful, the meeting on motion of Mr. E. C. Jones adjourned.

Attest,

Wm. E. Krewson, *Secretary.*

List of those who have acted as President of the Association since its organization:—

Wm. C. Bakes,	1864–65
Thos. S. Wiegand,	1865–72
Chas. L. Eberle,	1872–73
Clemmons Parrish,	1873–74
Wm. McIntire,	1874–75
Adolph W. Miller, M. D.,	1875–76
Geo. W. Kennedy,	1876–77
Rich'd V. Mattison, M. D.,	1877–78
Albert P. Brown,	1878–79
Wm. E. Krewson,	1879–80
Hugh Campbell,	1880–81
Henry Trimble,	1881–82
Thos. H. Potts,	1882–83
Lucius E. Sayre,	1883–84
Chas. A. Weidemann, M.D.	1884–85

OPENING REMARKS

OF

LUCIUS E. SAYRE, PRESIDENT

Of the Alumni Association,

At the opening of the First Social Meeting, held Tuesday afternoon, October 9th, 1883, in the Museum of the College.

Mr. Sayre addressed those present, as follows:

GENTLEMEN:

You are probably aware that this is the first Social Meeting of the Alumni Association this season, the first of the five that will be held during the Winter. I am very glad indeed to see so many present—so many old familiar faces and friends to the Alumni here. I trust that you will lend us your support in these meetings. They are well named the Social Meetings of the Alumni. We solicit papers either Pharmaceutical, Scientific, Medical or Literary. We want something presented here at each meeting for our entertainment and for social discussion. I will call your attention at this time to the work of the Alumni; you will find activity in it: In the Alumni room on Thursday afternoons, the quizzes will be held, where you are welcome. It is not necessary for me at this time to go into any details about the quizzes there held, but I would simply invite one and all to participate. By your presence you will give us your encouragement, and at the same time will be able to test the value of what we have to present, whether it would be of service to you. If you find it will be of help in your studies and worthy of your taking up, you will at the same time be materially assisting this Association in its work for the students.

The President continuing said: I am very glad to notice that we have present this afternoon Prof. Bedford, of the New York College of Pharmacy, and I call upon him for a few remarks.

Prof. Bedford then came forward and made the following remarks:

MR. CHAIRMAN AND GENTLEMEN:

My friend, Mr. Sayre, has rather stolen the march on me. I came down here for business and not for pleasure, but hearing that there was a meeting this afternoon I came to see what metal you were made of. The first sight of investigation is promising, and I hope that if I should come here along about next March, that the promises would be fulfilled. I am glad to be here this afternoon, for while comparatively unprepared to speak on any topic, I am sure that you as well as myself have an interest in the business you have chosen for your calling. Though quite young myself I have spent, perhaps, more years in the business than the oldest of you here, excepting Mr. Sayre and Mr. A. P. Brown, and I must say that, while many are ready to say that the life of the apothecary is a hard struggle, and there is some truth in that, there are many compensations, at least in the way of doing good to others, yet they say you must not always look to doing good to others for your reward, but get the money too. Many are afraid the drug business is being over done, and I am continually asked the question, why is it your colleges are continually turning out so many clerks? But we don't take them, as the medical colleges do, right from the plow, and in two years turn them out doctors. We take those who have been in the business and educate them until they are fitted to carry it on. That is the difference.

I am sure that in this Institution you will find all the aids and accessories to prepare you for the business you have chosen, and I am sure that under the careful guidance of such teachers and Quiz Masters as you have here, you ought to be well satisfied, and you ought to be certainly competent men. If you are not, the fault is not with the teaching and the quizzing, but on the other side of the platform.

GOOD AND BAD PENMANSHIP;

OR,

PENMANSHIP IN PHARMACY.

A Paper read by Mr. Lucius E. Sayre, Ph. G., Class 1866, and President of the Alumni Association, at the first Social Meeting, held Tuesday afternoon, October 9th, 1883 :

In presenting the subject of penmanship, I question not that it will be easily anticipated what importance will be attached to the subject in connection with the business of the apothecary. There will be no doubt in any one's mind, who is familiar with the demands of this "high calling," what importance will be attached to even so mean a thing as the handling of a pen.

The term high calling is used justly, to designate our noble profession, which requires the knowledge of one of the grandest and a familiarity with many of the most important sciences ; and yet it is at the other extreme so "mean" as to require of those who would join its ranks and harness within its chafing traces, an acute observation, and particularly about such trifles as even the tying up of a package or the writing of a label. How often is the pharmacist's attainments judged by the manner in which he handles the paper and string ? His skill in compounding by the way he puts the physician's directions upon the label ?

Surely we belong to a broad profession—one which soars high and stoops low—into the heights of science, and even as the climax of our responsibility in vending a prescription, we must consider, for the sake of impression and cultivation of confidence, such a trifling matter as the shaping of a letter and the correct angular arrangement of these upon the outside of a bottle which remains as a living witness, for or against our reputation, among those who are ever ready to criticise. Our custom of looking at little points like this and brooding over them, makes us what many call a "small" (meaning mean), narrow-minded set of men ; but if you will pardon a little digression, the Ph. G. is not necessarily a mean or narrow man. How much lower is he than his compeer ? I have seen him in a "hand to hand" contest with the M. D. on the subject of chemistry, and he has won every time. The insignificant, mean pharmacist, notwithstanding the demanding manner of the M. D., would not yield, for he had the truth of chemistry on his side, which the former was obliged to admit, and that not patronizingly either. Take the average Ph. G. of to-day, and I will venture to assert he knows far more of true science of chemistry than his medical brother who so despises him. But I would not boast. Humility is far more becoming, and let us not despise the day of small things.

Good and bad writers we find everywhere and in all classes of society.

Any editor, merchant, druggist, business man, and every printer can testify to the enormous number of them in all classes of society and all kinds of business and professions. Penmanship seems to be considered, at the present time, of far less importance than was formerly the case. It used to be common to see in advertisements for clerks or boys, that "the applicant must write a good hand," but this is now comparatively rarely seen. It is not due to the universal acquirement of a good style of writing, but rather the habit of carelessness in regard to many matters of a minor nature (though of practical importance) which so many in the active walks of life have fallen into. It may be said that the greater number of bad writers now, than formerly, is due to the greater number of people who can write, but that the proportion is the same. We feel quite sure such is not the case, but that the proportion of the bad writers to good ones is *much* greater. Years ago it was customary, in all schools, to teach writing *thoroughly*. Is it done now? In far too many of them it is not. By teaching it thoroughly we mean giving the proper instruction until a fair knowledge of the correct formation of the characters is acquired, and then *requiring* regular practice for a definite length of time each day; and this to be continued until school has been forsaken for college or the duties of life. It is only by regular continuous practice that a good handwriting can be acquired, especially with those who do not have a natural talent for it. If not acquired before entering into business or a profession, it almost never will be afterwards, as so many other things of importance will be constantly arising to attract the attention. Unless a man's writing is very good it will be injured on his entering into an active business, and it will always show some change, and gradually acquire that peculiarity which gives to it the character by which it becomes known as the writing of this or that individual. Without this character the drawing of money from banks by checks would be impracticable. Type-writers, telephonic and telegraphic correspondence have been blamed for some of the bad writing, and still more the stylographic pen, which, though certainly convenient, undoubtedly has a bad effect on a good handwriting, rendering it less legible. There are those who affect a peculiar, scratchy, cramped, scrawly or long, spider-like handwriting, with the idea that it is a mark of character. The latter is generally adopted by some young ladies as an affectation which they think distinguishes them as belonging to good society. The others, by persons who desire to emulate great men whose writing was wretched. Such was that of Shakspeare, Carlyle, Napoleon and others. The writing of Horace Greeley does not deserve the name. There were times when he could not read it himself.

It is an exemplification of the perverseness of human nature, that the *bad* points of great men should be thus copied. It is very silly, and any one who feels greater for doing it is only deceiving *himself*. His correspondents and others who may have to decipher his scrawl, will give free vent to their anything but complimentary expressions of disapproval. It is almost needless to remark that anyone who will purposely write badly for such a reason is not, and most likely never will be, a great man. They have written badly because they were so much occupied with other really great matters as to feel it to be a waste of time to do it carefully—their thoughts flew faster than a careful pen could write them. He who desires to be a great man need not commence by writing badly; he can do that afterwards, when the world will be more willing to pardon the discrepancy.

The question naturally arises: what is good writing? We answer, that the very first and foremost requisite is *legibility*. The object and purpose of writing is to transmit from one person to another, a record of thoughts and facts. Therefore, the object of writing is lost when it is illegible. For all practical purposes, let us have crooked and irregularly sloping letters, but legible, rather than an illegible scrawl, copied after the writing of the greatest man that ever lived. Of course, we like to see a nice hand and occasionally a flourish, but a fair, round legible hand is a *necessity*—any addition of beauty to it is only an *accomplishment*. Our remarks, though of general application, we hope will particularly interest not only our medical brethren of whom we frequently have heard and read, and about whom we have almost sworn upon being caught with an undecipherable document from their pen in hand; but we would especially call the attention of the student of pharmacy to this apparently minor point. If you do not already understand the pen, I would certainly advise you to practice whenever you have the opportunity. You could not spend odd moments more profitably than in taking writing lessons, and while you are writing up your notes or whenever you find occasion to use the instrument. A physician said to me, in speaking of a brother druggist who had not pleased him: "His labels do not look as if he had been to the primary school; say nothing of the College of Pharmacy." Any argument for that man's defense would be useless. Were the doctor right or wrong in his judgment; that simple remark against the druggist made to patients would, in spite of everything, influence them greatly against him.

In the cultivation of writing, pay special attention to the clear and plain writing of a *label*, avoid all flourishes, but write so that the servant or the mistress, the ignorant, as well as learned, can clearly and unmistakably understand what are the directions of the physicians, and cultivate a style of which you would not be ashamed; one that, like a certain business tact, is calculated to win the confidence even of the invalid. Without taking more of your time, I would say, although this is a "mean" matter, there is money in it.

PHARMACEUTICAL NOTES.

An Address delivered by Prof. Henry Trimble, Ph. G., Class 1876, at the same Social Meeting, (October 9th, 1883) being a synopsis of notes taken during his trip to England, France and Germany, during the Summer of 1883.

GENTLEMEN:

I will have to modify the title somewhat, I did not take a great many pharmaceutical notes while abroad, therefore can simply give you those notes with a little additional. The subject was Dr. Miller's suggestion, and was put down without consulting me about the wording of the subject, so it may be changed slightly. I do not want to tire you with my account of "When I was in Europe," or anything of that kind. There are two classes of Americans that go abroad. One class goes there with an idea of criticizing everything they meet, and they do it. They find fault with everything from the time they leave New York until the time they get back, and everything is unfavorable. They do not mean to do it, but they start out with the idea that they are not going to see a land as good as their own, and nothing will suit them, no matter how well it is gotten up. The other class goes out with a like idea of speaking favorably of everything they see. Everything is just exactly right over there. I have recently read a book, written by a gentleman who evidently started out with that idea. He spoke favorably of almost everything, even the bad weather that they have over in Europe, and explained it in this way, that the water was not as wet over there as ours is. It seemed almost impossible for me to believe that a sensible man would make such a statement, but it is plainly in this book that he went out walking on a wet day and it seemed to him as though his shoes did not get as wet as they would in a similar rain in America. And he also suggested that the fire was not quite as hot. Well, they do not get quite as hot there, for they have open fire places, but the fire in those fire places, if you get in the right position, is just as hot as it is around here.

In regard to my studies abroad, I went immediately to the town of Leeds. It is not a place visited much by Americans. I went there with an idea of seeing their Industrial College, known as Yorkshire College. It is, I might say, a peculiar college, because they have but one just like it in England, and none like it in this country. It might be called a technical school, but it varies in placing special stress on a few branches. The subject of chemistry is taught there to a very high degree, and the subject of physics, and the subject of dyeing and weaving. It is a real, practical school, a technical school. We may have a few in this country, but we do not carry those branches to the extent that they do.

Leeds is situated in Yorkshire, and is in the midst of the woolen manufacturing trade of England. A large part of it is done there and within a few miles of the place. The position of this college is favorable. I especially looked into the chemical department and the departments of dyeing and weaving. To give you an idea of the thoroughness with which they undertake matters there: they have a building adapted especially to weaving, filled with looms, about seventy feet in length and say twenty or thirty feet in width, one story high only. The student that takes that department goes in there, and really weaves cloth in some form or other. Then they have a dyeing department, which is very similar in size. Both of these buildings are equipped with steam engines and steam apparatus. They have a very good supply of steam. In the dyeing department they have numerous dye kettles, jacketed kettles, and the students are allowed to dye the fabric made in the weaving department. They go regularly through a course of dyeing just as much as though they were in a dye house. When they graduate they are really practical dyers, though of course they have not the business ideas. So far as actual dyeing is concerned, they can do it, and further than that they know the reason why; they have had that explained to them. Dyers in England are more advanced than in this country. Here they mix certain dyes and they give a certain color, and that is all they know about it. So it is somewhat with the dyers in England, but they are growing out of that; they study out the chemical action of the dyes, the change which takes place when a dye goes on fibre and everything in connection with it, to get a thorough understanding of what they are about.

The chemical department there was in a very flourishing condition. The college only started about ten years ago, and they have about three hundred students, but they are in a cramped condition, as they are now erecting a new building. The dyeing and weaving departments already had their buildings put up, but the chemical department is in the old building, and they are just now putting up a new building with a new laboratory.

Leeds also is a flourishing place in all matters of education. They have a public library, which is not only free to members, but to everybody. They can go there, and without owning a share or anything, take out a book and sit down and read, and on certain conditions take books away. I have visited that library. It is a real curiosity. You do not see people there as you do in our Mercantile Library. You see the working class, the poor—all classes are there. They certainly are poor people, poorly dressed, but they are an intelligent class of people, and they take out all kinds of books and sit down and read. Then they have a mechanic's institute also, similar to our Franklin Institute, but better equipped. And everything in the town has an air of completeness. The streets are very well kept. The buildings have a substantial look; stone buildings all well made, well built and well blacked with coal dust, bituminous coal smoke; but that is not a very serious objection to the place. There are, however, many objections to the place. I want to strike the medium between those who are too critical and those who are too favorably impressed with the people over there and their country. The weather, while I was in Leeds, which probably was a week or ten days, was the meanest that anybody could possibly have, I think, very much like our April weather. They complain of it being very warm there with the thermometer down to about fifty-five. There are no fires, it is damp, and you cannot get dry, or warm, and with such an atmosphere that I do not wonder that many Americans get disgusted. They call it American over there, they do not call it United States. It is very trying not only on one's patience, but on one's constitution.

There is another city near Leeds, not quite so large, but in just as flourishing a condition, the town of Bradford, where there is a great deal of manufacturing going on, and where they are starting a new college.

After investigating Yorkshire College and Library, which I found well stocked with books, I went to Manchester and visited the College of England, I suppose, Owens' College, founded probably forty years ago. It is a magnificent affair, well equipped in every respect. There was more of the air of completeness about it than about the chemical department of the College at Leeds. At Owens' College the building had been finished for some time.

I only visited the chemical department and lecture room. Here are two laboratories, one for students just beginning, and one for those more advanced; both fitted up alike, with about the same space for each student that we have in the chemical laboratory here, in fact not much unlike in size and details as ours here; probably a more liberal distribution of fume closets. Each student was supplied with water and a good supply of gas. Everything had an air of completeness about it. In the other laboratory, where the more advanced student worked, the completeness was about the same. Here Profs. Roscoe and Schoreleimer work. I saw their tables, but unfortunately they were in London. They have very complete apparatus for carrying on their work and very fine balances. They have very many little peculiarities in England which a person notices. They have several balance rooms there, but the one the students use had a notice up in it of a fine of sixpence for dropping anything on the balance pan, and a fine of a shilling for spilling any acid, and so it went down the whole list of grievances, a shilling and a sixpence, and on inquiry I found that they really paid the money when they had any trouble of that kind. And there was a small case there I noticed, one-half as large as that case over yonder, and that had probably one hundred volumes in it. Those books had been bought by the fines paid by the students. The students had really paid for the library by promptly paying their fines when they injured the balances in any way. The balance room was some little distance from the laboratory, and the students often went there and waited while their work was progressing, and while they were waiting they could be reading. The cases were filled with the very latest works on chemistry, very valuable works in fact. They had two very good chemical lecture rooms; one for organic chemistry simply. The main lecture room there was in very good condition, and it had a collection of samples which any college might be proud of. A collection of a large quanity of Vanadium salts, worked up I believe by Professor Roscoe. These salts were there in this large case. As much as a pound or two of some of the rare Vanadium salts also a number of alloys. We never see any alloys of Vanadium here. They are of no practical value, but still are of value as specimens.

So much for Owen College. The other departments are just as complete. It is not a technical school like the one at Leeds, further than analytical chemistry. It is just such a college as our leading colleges in this country, in which I might say the scientific department rather predominates. Manchester is a very busy place, somewhat resembling New York. I saw it under rather unfavorable circumstances because it rained, in fact it rained every day I was in England but one; not that it rained very continuously, but it would be clear maybe in the morning and in five minutes it would be pouring, and you would be wet through if you did not have an umbrella. And by the time you reached your hotel it would be clear again. The English walk along without regarding the weather. Some of them take an umbrella but many of them do not even take that.

From Manchester I took a little journey in the Lake District. It rained there. To give you an idea of the English notion of the weather; they all ride on top of these stage coaches through the Lake District. I went up there on a stormy day, the driver insisted that there were "only a few drops coming down" when it was pouring, and though it was pouring so much only three or four seats inside were occupied. But the twenty seats on top were all filled.

I went afterwards to London. I was unable to give the attention to the colleges I hoped to, but of course I visited the Pharmaceutical Society there. It was a small building I might say. I want to speak of it as well as I can because there was real worth in that building. I had a letter of introduction and consequently was well received. I saw Professor Attfield's room, although he was not in London. He was taking his vacation. Take it altogether it was a fair laboratory. They had a good supply of all necessary apparatus and re-agents. It was evidently well attended to by Professor Attfield and those in charge of it. The lecture room—they only had one—was very small, evidently pretty well equipped. It had benches not quite as elaborate as our own but probably quite as hard. It would only seat about 250 students and that is a good many more than they ever had at one time. I saw Professor Redwood. He was a man very agreeable; very much like our late Professor Bridges. He was willing to grant that America is a growing place full of new ideas. He said: "We would like to go to America and get some of your ideas. You think nothing of coming over here and taking our ideas, but Englishmen do not travel as much as you do and we do not get your ideas. We read of you through the journals and know you are an active people." That is the disposition of the colleges towards us. The disposition in private life is not the same. They hardly know there is such a place as America. At least they so pretend, and they certainly have a very microscopic idea of it. They think it not safe for a man to walk the streets of New York and Philadelphia after dark and scarcely in daylight. I was asked if Philadelphia was near Pennsylvania, and a few ideas of that kind would rather disgust one, but in the colleges it was different. They cannot be kind enough. They grant all that we deserve and maybe a little more.

To speak further, there were one or two very important parts of it I must not neglect. The library is well equipped and evidently well used. They had a good collection of other books than chemistry and pharmacy. They do not have one room in the building as large as this, but have two rooms, which, put together, perhaps would be as large or a little larger than this. Those two rooms constituted the museum, and were very well filled. One gentleman in the college gives almost all his time to that museum. Students attend it a great deal; they examine the specimens frequently and carefully. It is equipped not only with the ordinary chemicals, but with fine and rare chemicals. One thing attracted me there. They save the crystals made by the students in the laboratory, by that I mean a few students had taken it into their heads to make some unusually large crystals, do what they call nursing the crystals We have a few specimens, but they are getting pretty old. There were new crystals of alum and crystals of sulphate of magnesia, one, I think, four or five inches in length, and some crystals of sulphate of zinc that had been nursed by some student. There were very large crystals of alum. A student had nursed some in which he had put a little color, making it purple. It had left just enough color to give it the fine purple, a little different from the iron alum, a little darker. In the library and the museum I think they are ahead of us. In the museum I know they are. They have better facilities than we have. They are in the city, which is in the centre of the world. Not the geographical centre, but the intellectual centre. They have opportunities for getting specimens which we have not. For instance—I cannot give you an idea of the number of specimens they had of Cinchona barks. They had large samples of all the salts of opium. One of the students had worked them up and made some of the rarer salts. And that is a suggestion to you. It would be well if you could write such thesis as would give fine products which would go into the museum. We have a few crystals, still our collection is small yet. They have other Industrial Colleges in London—Gresham College, but there is no practical work there that I am aware of. I need go no further in England.

When I got as far as Paris I saw the outside of the School of Pharmacy, but my time was taken up by some places I wanted to see more. I might mention one place which I never heard of any travelers visiting until I reached England. That is the Gobelins, an institution where they make tapestry. The idea is to develop the industry. I cannot say how many years ago it was founded, probably in the sixteenth or seventeenth century, and it has developed since. There are still samples of the tapestry made there a great many years ago; some of it is just hanging together. The tapestry made there is all done by hand; the place was supported by the Kings of France when they had them, and the tapestry which was made was not sold, but used for the Royal Family, and also given away to the nobility in other countries; used as presents you might say. It consists of weaving into a carpet the most elaborate paintings, worked in by hand. The color is put in by the thread. The threads are dyed first, and the man chooses his thread from a collection of them and slips it in. You may think that is rather a slow way to work pictures. This is all done by hand and one thread is put in at the time, and the man that does six square inches a day does a good day's work. The men there have been at it all their lives. When they have an insurrection in Paris the common people run in and tear this all to pieces, because it is one of the things that is not bread and butter and they think it must be destroyed. It has been burned down several times. It is something impossible to describe to you. We can look at the finest paintings in Paris, or this country, or anywhere, and you will see nothing to equal that which is worked in by hand into the fabric. The fabric is worked by adding a thread at a time. Thus they secure the finest shade of color; where you could not discover the slightest difference between two threads they discover it instantly.

As I said I only saw the outside of the college in Paris; I might sum up by giving my idea, which was favorable. But I have not any love for Paris. There is something in the atmosphere that is almost suffocating, I was going to say. You do not care to stay. They are a very irreligious people, you know. And as for those countries—France and Germany—I do not know how it is in Germany; they say that wine is so plenty that the people get accustomed to it and you do not see so much drunkenness, but that was not in accordance with my experience. My first experience was to get a drunken hackman. They are "run in" a little quicker there than here. Besides, I think the men in Paris can carry a little more than they can here. They don't seem to have anything else to do, a large part of them, than to drink brandy and absinthe. They will sit down at a dinner for from three to five hours and drink all the brandy that they can get hold of. People that go on in that state cannot be criticised for occasionally turning the town up side down. They kill off a lot of these worthless ones at such times and the others get over their spree. In England there is lots of drinking, and in London you can easily see a drunken man if you wish, but the police regulations are superior, I think, to ours. There is a policeman, you might say, everywhere. You cannot walk anywhere in the centre of London without meeting one. That is not where I criticise England, but I do criticise England for having a nobility—an utterly useless nobility. It didn't occur to me that such was the case until I was about starting for home I came in contact with a number of what we call "young bloods." I traveled with some of them. They came over on the vessel, and as there were a great many Americans on board we had a good many skirmishes. They were told what our opinion of the country was. They were men who had never done a day's work. They were opposed to free schools. They were men who hated a man like Gladstone, who belonged to the Liberal Party, and wanted to give the poor a chance. They had nothing to do and to kill time they came over here. That is about the class that visit here. They do not take home any ideas. The consequence is that England is ruled by a conservative idea, not in theory; practically the Liberal Party has control. Their railroading is about fifty years behind ours. You have to get into a little box car and are locked in. You are liable to all kind of rudeness from those inside. I had some experience of that kind, being boxed up with a man loaded with gin. That is traveling on the rail in England. I have heard Americans talk who went with the idea of speaking favorably of everything, and heard them say that their railroads were far ahead of ours, that these little cars were the greatest luxury possible. The only thing that can be said of the English railroads, is in regard to the road beds, they are as nearly perfect as can be. They never cross a street and very rarely a road in the country at grade. There the road goes under them or over them. For that reason they are able to make good time without running at a high rate of speed. But their road beds are nearly perfect, only they are behind in the rolling stock. There are numerous other things that I might mention if I once got off the scientific part of the journey, because you cannot walk out in the street without seeing something peculiar, something you would like to tell. But I only attempt to tell my scientific experience. I would advise you all to go over there. I think it does an American good; it takes some of the conceit out of him. It enlarges his views of the English and England. If a man will go over to England

and take an unbiased view of it, I think he will admit that there are a great many good ideas we can carry back with us. I hope that with the increased facilities for crossing the ocean, it will be considered a small matter in the future, to make the journey.

THE RELATION OF PHARMACY TO THERAPEUTICS.

A Lecture delivered before the Alumni Association of the Philadelphia College of Pharmacy, by Dr. Frank E. Stewart, Ph. G., Class of 1876, at the Second Social Meeting, held Tuesday afternoon, November 13th, 1883.

It is with a feeling of gratification that I stand before the Alumni Association of the leading College of Pharmacy of the United States, for the purpose of delivering a lecture on a subject of so much importance to the progress of pharmacy, both as a science, and as an art as is its relations to therapeutics, A graduate of the "Centennial" Class of the Philadelphia College of Pharmacy, of which we were all so proud, as the year commemorated the one hundredth birthday of the American Republic; and subsequently a graduate of that old and respectable school, the Jefferson Medical College, I have the honor of belonging to the Alumni of two Philadelphia medical schools, and, therefore, speak to-day fully identified, and in harmony with, Philadelphia medical interests. I allude to this fact, not so much for the purpose of boasting—although our Alumni should always be our boast—but for the purpose of accounting for the fact that, being a graduate of both pharmacy and therapeutics, my attention has been more particularly called to a consideration of the relations existing between these two branches of medical science.

First, then, for definition, for on definition depends the clear comprehension of the terms pharmacy and therapeutics.

Pharmacy is the science of preparing medicine; therapeutics is the science of applying medicine to the treatment of the sick; the collection of substance used in medicine is called the materia medica.

Now I shall draw four deductions, and several conclusions, from these definitions; and these deductions and conclusions will form my lecture to-day.

Deduction 1.—Pharmacy is dependent upon therapeutics, and the pharmacist upon the physician.

First.—Pharmacy is dependent upon therapeutics, because the preparation of medicine is dependent upon its application. Of what avail would be the most carefully prepared pharmaceutical preparation unless some use be found for it? Just to the extent that it is useful it becomes a thing of worth to the physician who prescribes it, and the pharmacist who makes his living by its sale. And right here I would like to call attention to a very important point. It is this, whoever prescribes medicine practices therapeutics. It may be an educated physician, it may be a pharmacist, it may be a friend of the patient, or it may be the patient himself. In either case the prescriber takes upon himself the prerogative of the physician, becomes, for the time being at least, a practitioner of therapeutics, and the fact still remains that pharmacy is dependent upon therapeutics, and the pharmacist upon the physician.

Second.—As our knowledge of disease and its treatment increases, medicine must be more scientifically prepared to meet the new requirements. This calls for an increased knowledge of pharmacy. Pharmacy must progress, therefore, as a science, in proportion to the progress of therapeutics. Again, a higher standard of education is required also, so that pharmacy must progress as a profession as well. Conversely, if no fresh discoveries are made in the way of applying medicine, but little change in the way of preparing them is likely to occur, so that progress in pharmacy must be hindered unless there is progress in therapeutics.

Deduction II.—Therapeutics is dependent upon pharmacy, and the physician is dependent upon the pharmacists.

First.—Therapeutics is dependent upon pharmacy for a knowledge of preparing medicine in the best manner to meet the requirements of the sick. The acceptance in therapeutics of the more elegant fluid extract and tincture in place of the bolus and nauseating decoction, once in vogue, is proof of this. And for further proof behold the grand discoveries of alkaloids and concentrated active principles in place of bulky powders and crude drugs. Now days we wrap pills in sugar, and cover bitterness with soluble preparations of gelatin, and, but for the bitterness of the belly the patient would be completely deceived by the sweetness of the mouth.

Second.—The physician is dependent upon the pharmacist to prepare and dispense his medicines. The busy practitioner has neither time or inclination, or, indeed, has he that education necessary to prepare and dispense medicine. A few country doctors, to be sure, attempt to do both, but their pharmacy would hardly suit the fastidious taste of city patients. Of late years a number of physicians in some of our larger cities have adopted the custom of dispensing to their patients. These gentlemen, however, never attempt to prepare medicine, but are entirely dependent upon pharmacists, who prepare them in suitable forms for use. Even if this custom became universal, the fact that the medical profession will have to depend upon the profession of pharmacy would still remain.

Deduction III.—The literature of therapeutics is dependent upon pharmacy. When a physician has occasion to use a new pharmaceutical preparation in the treatment of a patient, and is successful in its application, it is his duty, and often his habit, to report the fact for the benefit of science. That this report may be intelligible to future generations, it is necessary that the nature of the preparation employed should be recorded in such a manner that it may be prepared in the same way again. Otherwise the method of preparing the article would, at last, be forgotten, and its name, in the report, would represent something no longer in existence. What would be the condition of the literature of therapeutics in a couple of centuries hence if all future discoveries in pharmacy were locked up to trade secrecy? Ask the literature of other sciences where many a name may be found which represents an art that is lost. Of what use to the world would be the knowledge that quinine is a valuable remedy in the treatment of malaria if all knowledge of the method of manufacturing quinine had been forgotten? We must know, not only that quinine is a remedy, but what quinine is and how to make it. The knowledge of the medicine itself, and the method of preparing it, must be published, or the knowledge of applying it will be of little worth.

Again, if pharmacy is to be a science, this knowledge must be classified. Science is classified knowledge; or, to use a definition that I have often used before, and for which I am indebted to that eminent scientific man, President Porter, of Yale College, from whose valuable work on Psychology I have drawn it. "Science professes to relate what is actually known or may be learned in the forms of science, viz.: in the forms of exact observation, precise definition, fixed terminology, classified arrangement, and rational explanation." To classify knowledge it must be exact, precisely defined, and rationally explained. Then it must be conserved under a fixed and changeless nomenclature—fixed to prevent confusion; changeless, that it may always represent a definite thing; so that in a thousand years names may represent the same things as in the beginning. Of so much importance to science is this matter of changeless nomenclature, that the dead languages have been selected to represent it. A living language is subject to certain modifications, as time goes by, so that words change meanings, and may conceal thought instead of reveal it. For the reasons stated, and for many other reasons that time will not permit me to relate, there it is absolutely indispensable to the existence of pharmacy as a science, and to the literature of therapeutics, that exact knowledge of every pharmaceutical preparation should be published, and become the common property of the profession.

Although, from a scientific point of view, the interests of the two professions are identical, physicians and pharmacists are continually at loggerheads. Why is this? Let us see what complaints each make concerning the other. The physicians complain that the pharmacists prescribe over the counter, and thus become the rivals of the medical profession, whose exclusive prerogative it is to treat the sick; that they renew prescriptions indefinitely without the physician's order to do so. It therefore often happens that one prescription is used by the patient many times, and by his friends many times more, thus cheating the physician out of his fees. Finally, it is claimed that pharmacists recommend, and sell, patent medicines, and all kinds of nostrums,—a thing detrimental to the public, and ruinous in its effects on the physician's pocket book. The pharmacists answer these charges by saying that, as far as prescribing over the counter is concerned, they do no more than answer the questions of customers who inquire "what is good" for this or that minor complaint, such as a slight attack of colic, a toothache, or something equally as trivial, for which they recommend some harmless drug, and the public never consult the pharmacist for a disease of sufficient importance to call in a physician, except in rare instances, and then they are always sent to a doctor. As for the renewal of prescriptions without the doctor's order to do so, the courts have settled that matter by deciding that the prescription belongs to the patient. The pharmacist, therefore, has no right to refuse its renewal as many times as the patient may desire it. And, as for selling nostrums, no pharmacist is a friend to the nostrum trade. It is injurious to his business, requiring him to keep in stock a large variety of goods upon which he realizes very little margin. The public, however, demand them. Public opinion is friendly to the trade in them. The public is in the habit of going to the druggist for them. And to discontinue their sale would drive away custom, and send it to the store of the nearest competitor. But a stronger argument still is that the medical profession itself, is, in great measure, responsible for the prestige that the patent medicine trade has gained in this country. The term patent medicine is a misnomer which has deceived the profession. Medicines are very rarely patented. The patent law requires that full knowledge of an invention shall be published whereby the public may manufacture the invention when the patent expires. It grants in exchange for this publication an exclusive control of the sale of the invention for a certain number of years. When the patent expires the invention becomes the property of the public as it was before it was patented. The law does not recognize the exclusive right of discovery. Because you have discovered a new and useful thing does not preclude me from the right of using it. The public have a perfect right to the free use of your invention, whether you like it or not. But public policy has deemed it advisable to encourage invention by *granting* to the inventor the exclusive right to his invention for a limited number of years, until the investment of capital in the perfecting and working of the invention becomes a remunerative one. The public is benefitted by finally appropriating to its use the knowledge of the invention. Now it is this publication of exact knowledge that the nostrum trade, above all other things, has cause to dread. If it depended for its monopoly on the proving of the discovery of new and useful inventions, the nostrum trade would die a natural death. Its power is mystery founded on secrecy. It is a great and inflated bubble, and only needs the prick of the great bubble pricker—truth—for its collapse.

If "patent" medicines are not patent medicines, what are they? I hear you ask. They are what is commonly known as proprietary medicines. By proprietary their manufacturers mean to imply that they own property in them. They say this is my invention, and, because I discovered it, you have no right to it. The absurdity of their claim to exclusive right, founded on discovery, is apparent after what has been said. They rely on this claim, however, and on secrecy for their exclusive monopoly. To enforce this claim they pretend to say that the names which they call their medicines are trade-marks, not taking it into consideration that these names, by use, become the descriptive names of the articles to which they are applied, and, therefore, cannot be trade-marks according to law. The fact is that the so-called proprietary medicine trade is an arrogant attempt at an exclusive and everlasting monopoly under the guise of law and a system of secrecy, and that it is as far opposite to scientific pharmacy as the North Pole is from the South.

Within the past few years several manufacturing houses have introduced to the medical profession a number of so-called pharmaceutical preparations under the proprietary medicine system. By their courtesy and politeness to the profession, and the fact that many of their compounds are pleasant to take, convenient to prescribe, and often elegant compounds of old and well known drugs, they have succeeded in building up for themselves a great business; and have made both position and fortune It is unfortunate that these houses have adopted the proprietary medicine system of protection, for their success has made the proprietary medicine business respectable. In other words, it has made the "patent" medicine business respectable. We have, therefore, the lamentable fact before us that the medical profession are prescribing "patent" medicines to the exclusion of pharmaceutical preparations, and the pharmaceutical profession are forced to turn elsewhere for support. But the medical profession say, these are not secret medicines, for their formulæ appear on the bottles, and they are not patent medicines, for they are not patented. They are secret medicines, however, from a pharmaceutical point of view, for exact knowledge of them, whereby any one can manufacture the same things, is never published, but is a thing of trade secrecy. And, from a scientific point of view, the objections to them is too apparent, after what has been said, to admit of argument. How are you to classify the knowledge of a proprietary medicine, and publish it in standard text-books, and protect it by a fixed and changeless nomenclature? The art of their manufacture is a thing of trade secrecy, and their names are claimed as private property by the manufacturers. The thing is absurd. If there is to be a science of pharmacy, or a profession of pharmacy, scientific pharmacists must unite against this abuse. If therapeutics is to have a literature, the medical profession must join the pharmacists against the proprietary medicine system in all its forms. The pharmacists have some excuse for the irregularities charged against them, because of their relations to the public, and because it is a fact that the medical profession have educated the public to demand "patent" medicines by their prescriptions; but the medical profession have no excuse whatever for prescribing "patent" medicines. Physicians, therefore, should pluck the beam out of their own eye, so that they may see clearly how to remove the mote out of their brother pharmacist's eye in this matter of "patent" medicines.

Pharmacy we consider a liberal profession, like law, theology, and medicine. A liberal profession is distinguished from what is called a trade by the ideal expressed by the word liberal. Liberal, in this connection, means philanthropic—the service of mankind. The ethics of a liberal profession demand as the first thing a service to humanity, and especially a service to the profession. Anything that has a tendency to injure the cause of humanity, or to deprive the profession of benefit, is considered highly unprofessional. It is the duty of a professional man to publish his discoveries for the benefit of humanity and the profession. To keep knowledge of a discovery secret, for the purpose of making money, is considered a disgrace. A trade, on the contrary, is supposed to be run on such no liberal policy. What it discovers it appropriates for money-making purposes. But a trade, does not, cannot, appeal for recognition as a liberal profession. Now I strongly object to this attempt of the manufacturing houses alluded to, who seek to make pharmacy a trade, and to ruin it as a profession. It is a war between two opposite and opposing principles. The success of the proprietary medicine trade means death to scientific pharmacy, ruin to the pharmaceutical profession, and an appalling calamity to the science of medicine as represented by therapeutics.

Now I have to arraign the medical profession for fostering this proprietary medicine scheme in the following terms: By so doing they have all but ruined pharmacy as a profession; violated their own code of ethics as a liberal profession by endorsing a secret and proprietary monopoly; made the nostrum business respectable by their certificates; and, finally, as it turns out, sanctioned a scheme that is contrary to law, and entirely in opposition to the policy of the government in its relations to the arts and sciences as set forth in the patent law. Until the medical profession have removed this blot from their fair escutcheon, they have no right to berate the pharmacist for selling patent medicines.

Therefore, as there is plenty of fault on both sides of the controversy between pharmacists and physicians, let us look facts squarely in the face, and consider some method by which harmony may be restored between the two professions. What are characterized as the abuses of pharmacy by pharmacists, the medical profession are as much to be blamed for as they; and what is worse, the abuses are likely to continue for a long time, because the exciting cause is now beyond control. The cause to which I refer must be looked for in the effect that the position of the two professions in regard to proprietary medicines has had on the public. The public has been educated thereby to believe in them; and as long as public sentiment is where it is at present their sale will continue. The same thing may be said with regard to the renewal of prescriptions without the order of the physician. And, as long as the public insist on being their own physicians they will go to the drug store for toothache drops, a dose of castor oil, and some anti-bilious pills, which the wicked apothecary will prescribe over his counter.

Deduction IV.—As a final deduction from these definitions I would draw the following: therapeutics and pharmacy are both dependent upon the materia medica; and on this fact hangs the whole solution of the problem of the relation of pharmacy to therapeutics. Materia medica is the name of the collection of substances used in medicine, viz.: drugs; and pharmacy and therapeutics are but branches of the science of drugs. Pharmacy cannot be a science by itself, neither can therapeutics be a science by itself. One is the knowledge of preparing drugs, the other of giving them. Whether we study pharmacy or therapeutics, therefore, we study drugs. And both professions are interested in this study. Let me call your attention, then, to the importance of the science of drugs. In the study of this science both professions may unite; and in the earnest pursuit of this science rivalry and bitter feeling will cease. Interest the public in the science of drugs, also, and they will demand nostrums no longer. Spread abroad the truth and error will die.

The question for both professions to answer is: How can progress best be promoted in the science of drugs? In this connection I would beg to call your attention to the following suggestions, and to a plan, which if adopted, I think would be the best way to answer this question.

First.—I would suggest that the old classification of pharmacy, therapeutics, and materia medica, under the general term pharmacology, be again brought into use; and that the term be enlarged in its signification to include all the branches that pertain to the study of drugs, microscopy, toxicology, physiology of drugs, etc., as well as the branches usually taught in pharmaceutical and medical colleges.

Second.—With regard to the manufacturing houses, I would insist that they respect the requirements of science, and, if they will compete on an open pharmacy basis, recognize them as friends to scientific pharmacy. Their secret of success is that they cater to the wants of the medical profession; and their service is recognized accordingly. It is, and must always be, a question of service to the medical profession, for pharmacy owes its allegiance to therapeutics, and the pharmacist to the physician; and he who renders best service must succeed. The success of the proprietary medicines in their hands has not been so much on account of their proprietary nature as it has been due to the fact that they have filled a demand of the physicians for ready-made compounds for convenience in prescribing. It is not for pharmacists to dictate to the medical profession what they shall prescribe; but it is to their interest to consult the medical profession with regard to what they would like to prescribe; and have everything in readiness to meet the demands of physicians upon them.

Third.—And in conclusion, I would again bring before your notice a plan that I suggested two or three years ago, and that met with favor at the time of its original suggestion. Believing, as I do, that progress, either in pharmacy or therapeutics, depends, in great measure, upon progress in the knowledge of the materia medica, and upon interesting both professions in a more special study of drugs, I would make a plea for pure science, separated, entirely, from trade interests, and devoted to furthering the interests of science. The plan is a collective investigation of the materia medica of the world by the United States Government. To do this I would have founded at Washington a government laboratory provided with men, apparatus, and means for doing scientific work on drugs. Each department of the knowledge of drugs should be represented. There should be departments of botany, agriculture, history, chemistry, microscopy, toxicology, pharmacy, physiology, and therapeutics. A department of botany to identify, and properly classify, medicinal plants; of agriculture, to study their cultivation; of history, to compare them with each other with regard to their relative importance as remedial agents; of chemistry, to investigate their active principles, and to learn the best methods for their extraction; of microscopy, to determine their structure, and for the purpose of identifying drugs, and preventing their adulteration and substitution; of toxicology, to investigate their properties as poisons, and to ascertain their antidotes; of pharmacy, to prepare them aright; of physiology, to determine their actions on animals for the purpose of studying physiological therapeutics; and of therapeutics, to send them out for clinical test in the hands of the profession, guided by the knowledge already collected by the laboratory.

I would have this work include both old and new drugs. Our knowledge concerning some of the oldest drugs in the materia medica is but limited, and much of the information that exists in the text-books is trash, as far as therapeutics is concerned. It needs a thorough sifting, and revision, after careful experiment is made, to prove what is true, and to separate the wheat from the chaff.

When a new drug is discovered, that seems fair to be of value as a therapeutic agent, let it first be tested physiologically on animals, and, if it prove to possess activity, let it be submitted to chemical analyses. Then let it be prepared in the best form for administration, and sent to the hospital service of the country, and to the medical profession at large, so that its virtues may be tested clinically. That the medical profession may be well informed with regard to the drug so that they can make such tests intelligently. Let "working bulletins" be prepared, giving in as brief manner as possible, the state of existing knowledge concerning the drug after it leaves the investigation of the laboratory. Accompany the bulletins with a list of questions stating what it is desirable to ascertain about the drug, requesting answers from the profession. When sufficient information is thus obtained to justify its compilation, let it be collected and classified in the forms of science, and published for the benefit of science. Thus would be founded a scientific pharmacological literature, progress in the knowledge of drugs would be promoted, the position of both professions improved, and the cause of suffering humanity greatly benefitted.

There is at Washington an institution known as the Smithsonian Institution. Its founding is due to that great lover of science, James Smithson. Its object is stated in the following clause of his will: "I bequeath the whole of my property to the United States of America to found at Washington, under the name of the Smithsonian Institution, an establishment for the increase and diffusion of knowledge among men." This institution is devoted to scientific work. It is well provided with money, elegant buildings, a fine library, an excellent laboratory, and a corps of scientific men of which we are all proud. The work of the United States Fish Commission, National Museum, and scientific research in other departments of science, are too well known for comment here. I would suggest that there be added to this institution a laboratory of experimental pharmacology for the purposes that I have described.

To sum up, therefore, pharmacy and therapeutics are but branches of the science of drugs, and dependent upon the materia medica. The science of drugs is properly called pharmacology. Pharmacology is a department of the science of medicine. The pharmacist and physician are both votaries of medical science, though interested in different branches. To prepare medicine aright pharmacy must conform to therapeutic usage; and the physician is dependent upon the pharmacist for such preparation. In the study of the materia medica both professions meet, and in favoring the progress of pharmacology their interests are mutual.

Finally, in the words of that eminent scientist, Dr. J. W. Dawson, "science is light, and light is good, but it must be carried high, else it will fail to enlighten the world. Let us strive to raise it high enough to shine over every obstruction which casts any shadow on the true interests of humanity. Above all, let us hold up the light, and not stand in it ourselves." Let us then, forget the controversies that so easily beset us as pharmacists and physicians and press forward to the mark of the high calling—a scientific pharmacology.

In connection with the above address, the following remarks were made upon it by Dr. A. W. Miller, Ph. G., Mr. L. E. Sayre, Ph. G., and Dr. Lawrence Turnbull, Ph. G.:

Dr. A. W. Miller, Ph. G., of the Class of 1862, said:

We have listened with a great deal of pleasure and satisfaction to this paper by Dr. Stewart, and as there are so many points of vital importance touching the subject of therapeutics, and also so many suggestions, I think that they are well worthy of being discussed. In regard to this matter I would say, that during my recent visit in Washington I was impressed with what was being done by the Government in this connection. They have not only chemical and botanical laboratories, but a most beautiful collection of materia medica specimens. The gentleman in charge seemed to be very anxious to show them to the members of the American Pharmaceutical Association. I was surprised at the beautiful arrangement of the collection in the Smithsonian Museum and the National Museum.

The Vice-President, Dr. Charles A. Weidemann, stated:

The American Pharmaceutical Association has made some provision to have the different items of interest in connection with pharmacology carried out by the Smithsonian Institution. I believe it is a department or record of pharmacological literature.

The President, Mr. Sayre, said:

I believe Mr. Colcord, of Lynn, Mass., made a motion at the last meeting of the American Pharmaceutical Association that the present collection of drugs at the Smithsonian Institution be enlarged, and contributions received from various parts of the country, and that it be the repository of the Association. In other words, that that would be the collection of the American Pharmaceutical Association, if I remember the motion of Mr. Colcord correctly.

There was a point in the interesting article just read concerning the therapeutics of pharmacy that I might possibly make some remarks upon, as to the feasibility of a more enlarged study of therapeutics. It does seem to me that if the therapeutics of each drug were given in the United States Pharmacopœia it would be a very valuable addition, and if the students of pharmacy would be required to have a knowledge of therapeutics it would be of great value to them and would elevate pharmacy. I do not think that such a study would interfere at all with the physician. It would simply enable the pharmacist to be more of a master of his situation. It requires one in order to compound a prescription, intelligently, to posess a knowledge of the action and application of medicines. Without taking up too much time, I will just add another illustration. A physician was called in the country to try his skill upon a very old and obstinate wound. An ointment of the oxide of zinc was prescribed freshly prepared. The druggist who compounded the prescription did it with apparently the utmost care. He used the best oxide of zinc. He carefully washed the lard, and took all the pains that any one could, according to his own statement.

I can recall many cases where such knowledge was quite necessary; one case I might mention of a prescription to be compounded being a preparation for the eye. The pharmacist used every precaution so far as purity of ingredients were concerned, but unfortunately the filtration of the finished solution did the harm. It was filtered through cotton which had been washed in the usual way with alcohol, but precaution was not taken to thoroughly wash out all the alcohol, the consequence was the minutest quantity which remained in this filtering medium, communicated to this delicate preparation sufficient irritating quality to cause the patient for whom it was prescribed much suffering. Instead of being beneficial its use was decidedly injurious. Now I feel that if the compounder of such a prescription had been fully aware of the antagonistic action of the minutest quantity of alcohol in this case he would not have dispensed the liquid in question. He would have been especially guarded in compounding against this apparently trifling matter. The doctor, however, could not get the results that were required. The wound seemed to be as obstinate as ever. No effect seemed to be produced in the right direction. On the contrary, it was in the other direction—it seemed to be made worse.

This case came under my own immediate observation, the physician was well known to myself, he sent me a personal note asking me if I would not compound a pound of the oxide of zinc ointment, specially and send it to him by express, which I did, and strange to say, it had the beneficial effect desired.

Do not understand me as saying this to advertise myself, gentlemen, but simply to illustrate the point. To make a long story short, the difference between my preparation and the former one was that mine contained no essential oils, the other did. The druggist alluded to thinking he would make a *most excellent* ointment took the liberty of slightly perfuming it with bergamot, lemon, &c. Now this is another instance of the point I wish to make, namely, that the knowledge of therapeutics would be not only beneficial but is almost essential. Had the druggist in question been properly informed as to the effect of essential oils, when thus applied, had he known the antagonism there was (so to speak) therapeutically between oxide of zinc and oil of lemon incorporated into an ointment, he would never have compounded the prescription in this way.

Dr. Miller said:

Mr. President, I am glad to hear that interest has been excited upon this subject. We have a gentleman present with us who spoke upon it a year ago, Dr. Turnbull, and I think we will be glad if he would make some remarks upon the subject to-day.

Dr. Turnbull then said:

I would be glad if I could remain a listener, as I have not had the pleasure of hearing the paper read, as I came in after the gentleman had finished reading. I will say that I am always anxious to learn, and I hope that great interest will be excited in this subject. I was glad to hear the remarks of Mr. Sayre. I really think that the knowledge of therapeutics is one of the essentials in a good pharmaceutical education. I believe every pharmacist should have a thorough knowledge of drugs so far as they are applied, so that he can assist the physician. As I said in my former paper, very often we get good hints from the pharmacists, not only in reference to the medicines, but as to the compounding of the same. Perhaps in compounding hastily we do not get the ingredients as we would like to have them. There is a little incompatibility with the drug, sometimes our chemistry is at fault, and it is a matter of very great moment. It is a matter of great moment I say to us as physicians. I am exceedingly sorry not to have heard the paper in full. I should have liked to have heard the views that have been expressed upon that subject. I simply add, I think that there are two points of importance. One is in regard to the diet. I think the physicians are often at a loss to know why patients get along so badly, when it is simply from the fact that the diet is neglected. The diet is a very important matter. I was early this morning called to a case of convulsions in labor. It happened to be an old family. It is not in my department, really, and I seldom go out upon such excursions now. Formerly I used to do a great deal of that sort of work, but for the last twenty years I have not done much out-door practice. But you often have a family connected with you, the children have grown up under your care, and when they come to be of good size they sometimes call upon the old family doctor in emergencies. I was this morning called to see a patient just in that condition. I found, on making inquiry, that these convulsions depended upon a fall that had occurred, and that there was a condition of excessive albumen in the urine, which, if it had been neglected, would have been a very serious matter.

Now, when albumen is found in the urine, as in the case of Bright's disease, the diet is a very simple matter. If we can remedy a patient's diet, avoid fruits, acids, and place the patient upon a milk diet, almost a skim-milk diet, it is wonderful how we can tide over the life of the patient at that time. It is a very essential matter that the diet should always be of a sustaining character, at the same time there are certain agents which are very much enhanced to the physician in his efforts to help the patient get well. Food should be properly cooked, even so simple an article as mush, or gruel, or beef tea, or essence of beef. All these things the apothecary ought to have at his finger's ends. When the doctor orders the beef tea, beef essence, or oatmeal mush, any preparation of that kind, the apothecary is the one inquired about. It is well then that the apothecary should be posted, so that he can give these little hints in reference to the preparation of the oatmeal. It must be recollected that in the preparation of oatmeal, if it is not thoroughly boiled for a long period of time, that we generally find it full of particles, and as soon as they get into the stomach they cause irritation, so much so that the patient's stomach becomes disordered. All the fluids become acid, instead of being a nice uniform jelly. When it comes into the stomach in that condition it acts like a poultice, or a soothing agent. The same may be said of the preparation of Indian meal. Great care ought to be taken in its preparation, as also in regard to the preparation of beef tea. They generally select the round of beef for beef tea. If they will take a piece of the neck, carefully cut it off, put it in a bottle, and properly prepare the beef essence, the beef tea would be really satisfactory, while no other method would be. There is a great deal of care to be taken in the proper preparation of the beef essence obtained from the apothecary so as to give the best results. You must remember that it is to be given to patients where the stomach is exceedingly delicate.

There is no nicer way than to take the beef cut in pieces, and lay it between a couple of blocks of ice, and then to allow the ice water to run from that. We have then a very nice essence, very grateful to the patient, and that material can be used afterward by the family, and need not be destroyed. It would not be like having it boiled up, and getting everything out of it. A great many of our patients require milk. Sometimes condensed milk is given. This should be properly mixed with water. You are all aware that condensed milk contains a large amount of saccharine matter. Some of the condensed milk contains potash, and the apothecary must know all about these things so as to be able to give hints in regard to the dilution of that material. There is nothing more valuable than a combination of milk and barley water. Condensed milk given often facilitates the progress of the patient to health.

You are all aware that there are no glands in the mouth of the little patient whose contents will act upon the starchy matter promptly. It is not until they get pretty well forward, therefore, that they can digest starchy matter. A mother will come into the apothecary shop and will tell the apothecary that the food does not agree with my baby. What is the apothecary to do unless he recollects about these things? There has been no change in the mouth that will produce sufficient ptyaline to digest the food. This is an important matter to the apothecary, and if he can give a hint to the mother, let him tell her that she had better stick to the milk, the condensed milk, or the barley water, or something of that kind. There are a great many of these foods which are improper for very young infants.

There is another thing of importance to the apothecary, I refer now to the injurious effects of alcohol. I have been led to think of this matter from reading an article for the prevention of insanity, and an investigation as to the care of the insane. Looking over the statistics I found that ten per cent. of the insane resulted from the use of alcohol in some way. This is a very important matter and one that we should think of seriously. As to how we can suggest things instead of giving tinctures or alcohol preparations, give them infusions, or give them bitter preparation and do not entice people to drink. We are said to do that. Physicians are said to make lots of drunkards. And I am sorry to say that it is too true, but I never, I can swear, that I have never done so in my life. I have always been a temperate man, and I always observed total abstinence. I believe that alcohol is a valuable agent, as a therapeutic agent, and Dr. Stewart will agree with me, but let it be pure, clear, and not given under another name, and only given in cases of great exhaustion. It is just simply to tide over, enough to sustain your patient. You will be asked if a stimulant is not needed, you will reply no, indeed; no stimulant if you can get a tonic, something that will sustain the patient, something that will build up the constitution, something that will take the place of the stimulant. Very often you can give a little bromide of potash, a little infusion of capsicum. Get the patient off the habit of taking it, instead of encouraging it. I think that that should be done by the apothecary as well as by the physician. They can give hints about these matters. An apothecary has a great deal of power. He is always a centre in a village and often so in large cities. People go to them and ask them all manner of questions, and sometimes questions which very much puzzle them. I remember a case where a lady came to me with what she said was a new kind of nut. I asked her where she obtained them, and I learned that they came from a farm in New Jersey—that she got them off the white oak tree. I looked at them, and she said: why, there is a live fly in them, and she inquired, how did that fly get in there, doctor? I told her it was a little fellow and that it was placed there and developed and grew and lived on the contents of the receptacle. She then wanted to know what it was, as she could not understand it. I replied that it was nothing but a variety of galls. This was a gall from the white oak. So these people will come to you with many questions of this sort, and that is the reason why the apothecary must be posted, must not be behindhand. He must be thoroughly scientific in all scientific matters, and practical in all practical matters.

Dr. Miller said:

In reference to the study of therapeutics I agree with what has been said, although I think that the views which have just been advanced are rather at a variance with the views of the majority. We have been led to believe that that study was somewhat difficult, and was more for the doctor than for the druggist. I am glad that pharmacists are recommended to post up on these subjects. It is rather refreshing to hear the other side of the question. I am in favor of a broader and wider education.

CASE OF POISONING BY AQUA AMMONIA.

Read at the same Social Meeting by Dr. Wm. MacIntosh:

At midnight, October 23d, 1883, a messenger summoned me hastily to a case of accidental poisoning by aqua ammoniæ; or, as he expressed it, spirits of hartshorn. Having a bottle of acetic acid in my office, I took it with me and hurried to the patient, who informed me that he had taken about three ounces of the poison. I found him in the following condition: Mind clear, and greatly excited, voice lost but able to make himself understood in whispers, burning pain in mouth, throat and stomach, great dyspnœa; I at once gave dilute acetic acid, which was almost immediately followed by profuse vomiting of a milky-looking liquid, smelling strongly of ammonia. I repeated the acetic acid in large quantities, and also gave raw eggs, and oil, by which I hoped to protect to a certain extent, the mucus membrane of the oesophagus and stomach, against the corrosive action of the drug. There being considerable spasm of the larynx I administered hypodermically 1-75 of a grain of atropia, combined with ¼ grain of morphia. (Up to this time the efforts at vomiting were almost constant.) He now became somewhat easier, the pulse which at first was 120, with respirations of 35, had fallen to a pulse of 96, and respirations of 20. I ordered a bladder filled with ice placed about the throat, and iced milk to be given to quench his thirst.

I saw him the following morning at ten o'clock. Retching continued, and the nurse informed me that the patient had vomited about a teaspoonful of pure blood. Four powders, each containing ¼ grain of morphia, were ordered, one to be given every hour, with instructions to discontinue them if sleep was produced before they had all been taken. At three o'clock in the afternoon he seemed somewhat easier, vomiting had ceased, and his general condition appeared more favorable, with the exception of the larynx, which was oedematous. I again ordered ice to be placed about the throat and prescribed:—

℞	Hydrarg. chl. mitis,	gr. xvi.
	Morphæ sulph.	gr. i.

To be divided into eight powders, one to be given every two (2) hours.

I found him next morning to be considerably prostrated from severe purging, but throat symptoms better. He also complained of entire loss of sense of taste; on visiting him in the afternoon and finding the purging to be excessive, I ordered two suppositories, each containing 1 gr. of aqueous extract of opium, with ¼ gr. of ext. of belladonna; one to be used at night and one in the morning.

I saw him again the following day; the purging had then stopped, he now complained of a numb feeling in the legs, and constant desire to toss about the bed, also inability to sleep. I ordered

℞	Chloral hydratis,	gr. xx.
	Potassii bromidi,	gr. xx.
	Aquæ,	f ʒ ii.
	Syr. aurantii corticis,	f ℥ ii.

A tablespoonful of this mixture to be taken at once, and if quiet or sleep was not produced in an hour, to repeat the dose; on the succeeding morning I found him very week and prostrated, with a thready pulse of 120, and a temperature of 102. I immediately injected hypodermically 48 minims of whiskey. In the afternoon the pulse had fallen to 96 and the temperature to 99. I again injected whiskey hypodermically and directed the nurse to give milk and whiskey in small quantities every fifteen minutes. From this time forward for the next five (5) days he steadily improved, and on November 1st I ceased my visits and allowed him go out. I have met him several times since and the only inconvenience he now suffers is a slight stricture of cardiac end of oesophagus and a blunted sense of taste.

THE TECHNIQUE OF BACTERIA INVESTIGATION,

BY

Dr. HENRY FORMAD,

Demonstrator of Pathological Anatomy in the University of Pennsylvania.

An Illustrated Lecture delivered at the Third Social Meeting, held Tuesday afternoon, December 11th, 1883.

Mr. President and Gentlemen:

I am very much obliged for the honor that you have conferred upon me in inviting me to lecture before your body. I ought to congratulate you on the success you have had in keeping up the interest of the profession in their Alma Mater, in their social intercourse.

I must also compliment your Executive Committee in combining in such an ingenious manner, science with pleasure.

I will bring before you to-day, the methods and the technique of the bacteria investigation. The germ theory is so much treated of now in the text-books, papers and journals, so that every member of this Association is more or less familiar with the significance of bacteria in disease. There are only two of these certainly and definitely proven to be the cause of disease. One in anthrax or malignant postule, and the other in relapsing fever. Other bacteria are not at all proved to have any definite relation of cause and effect. In every specific disease, fungi are found and their etiological relation with these diseases is advocated, but still nothing is definitely proven. I will not undertake at present to give a review here of the different investigations as this would be an endless matter. I would by the way say, I have in press a monograph on the subject which I will send to any member of the Association who desires it. This monograph will present the subject in a more interesting way than I would have time to give at present. The subject will be presented to you to-day with a view of illustrating the methods employed in recognizing, separating and cultivating of fungi. The present methods of study of these organisms, and the matter of their artificial culture, has come to such perfectness and such simplicity, that any one of you may make admirable studies in this respect; very interesting and attractive to any one who has some interest in botany and mycology.

I may, perhaps, say a few words as to the definition of bacteria and other lower fungi. The fungi which are seen as moulds everywhere, and which do so much mischief in spoiling your extracts, your syrups, and other things, all are true fungi. Then there is another variety of fungi, movable, very small organisms, the so-called bacteria, which are still smaller microscopic plants, found in enormous quantity everywhere, as I detailed to you about a year ago when I gave you some items of interest in reference to these organisms. There is no place in creation, no substance where they are not found, except in metals and oils, and acids. These organisms are so very small that we can get the best idea of their size when we consider that half a million or a million of them will find ample room in one single drop of water. Then as to the varieties of these fungi. They are of various shapes. By the kindness of your Professor of Botany, J. M. Maisch, I here show you a diagram which exhibits some of the forms of bacteria and fungi. They are round, rod-like, thread-like and spiral in shape. I had occasion at the last time when I had the honor of addressing you, to explain to you also the physiology of these bacteria and their use in the economy, which is a very great one. There are several chemical processes, which, as you know depend entirely upon bacteria. In reference to fermentation, I would like to tell you an interesting fact which has been lately discovered, concerning the yeast plant. Yeast was regarded as a special variety of fungi, a variety which does not form any mycelium or any threads with sporangia. This I will explain later on. It had been suggested before, that yeast was analogous to the spores of pennicillium glaucum, the ordinary mould fungus. Now it has been established by the researches of Brefeld, that the yeast plant is represented by the spores of multitudes of plants, and that the spores of any fungus will produce fermentation, and do exactly the same work which the selected yeast will do. This is quite an important discovery.

Then also you know that ergot is a production of fungi. This disease of the rye is not produced, as has been supposed, by one definite microbe, but by a variety of fungi. In fact, any fungus of the specie of ustillago can produce in the rye this diseased product, the sclerotium, called ergot. It is after all something like in some diseases of mankind; not the fungus, but it is the organism of the maternal plant which is essential to the production of ergot. Any one of the micrococci will produce ergot on rye, but only on rye, or allied plants, and on no other species of plant. So it is also with consumption. Any kind of fungi, in fact any irritant, will produce consumption in a scrofulous individual. It is the scrofulous condition now generally acknowledged, which is the cause of the disease, and not the bacilli, as advocated by Koch. These multiply wherever they find suitable soil. It is only necessary to present a favorable soil to any special species of fungi in order to make them grow.

I will to-day demonstrate to you the technique of bacteria investigation, and proceed at once to the demonstration of the methods employed.

In studying fungi, we must be familiar with the modes of separation and culture of these plants. We can cultivate fungi artificially. It is necessary to isolate the different forms of fungi from one another, to be able to study their life history, their mode of multiplication, their habits and peculiarities; and to raise crops of the individual isolated fungus.

This isolation of fungi is based upon the life property of the fungi and their preference to certain culture soils. Nearly all fungi have different habitats just like different animals have, or different species of mankind, or even different individuals of any one community. So for instance, some fungi live only in contact with air, others do not; hence, if I put put several forms of fungi in one vessel filled with culture liquid, one variety of fungi be supernatant, *i. e.*, will form what we might call a scum, while another variety will go to the bottom. In this way we have separated two or more varieties. One variety which lives on oxygen, and the other which does not need oxygen for its growth.

Again, some kinds will live in alkaline liquids and others in acids. So mycelial fungi can live and multiply well only in acid culture media. Bacteria on the contrary, especially micrococci, can live and multiply well only in soils of alkaline reaction. By putting different fungi into certain liquids only a certain form may live and give a good crop while others will die.

Various forms of bacteria live at different temperatures. Some fungi can live only at the ordinary temperature of the air, others can multiply only at a higher temperature. Then again the composition of the nidus or culture fluid or substance must often be different for different fungi. Fungi like all other beings have their tastes. So there are different substances, organic or inorganic, preferred by different fungi. We select for each fungus such soil as it likes best in order to raise good and pure crops. We also use living animals as a culture nidus for bacteria. Again, in the blood of different animals only certain varieties of bacteria will live; for instance in the blood of a rabbit only micrococci (round bacteria) will live and propogate, whilst in the body of a rat or mouse only bacilli will flourish. In the dog we find also that only a certain species of bacteria will thrive; so that, if we have a mixture of various fungi, and we inoculate with this mixture a rabbit, a rat and a dog, we find only micrococci in the rabbit, rod-shape bacteria in the rat, and still another kind of bacteria, if any, in the blood of the dog. It is very difficult however, to inoculate dogs with anything. So having learned the different habitats of fungi we use different liquid or different solid culture substances.

I may enumerate to you now some of these substances and their methods of preparation.

In former times liquids only were used for this purpose, such as some white of egg, or some other albuminous substance; buillon or soup from chicken or beef well filtered. A solution of gelatin is a good culture soil. These liquids are then medicated in such a manner to suit the taste of this or that variety of fungi which we intend to cultivate. One liquid which is most commonly used is the chicken soup. This may be best put in little glass bulbs. After the bulb is prepared and the sterilized culture liquid introduced a minute particle of the matter which contains the bacteria is added, adapting a culture fluid to suit the taste of the fungus to be isolated. This is called the first generation. By judicious planting from one bulb to the other the second, third, etc., generation we get successfully out of that fungus, which has survived, in this suitable culture soil, and in fourth, fifth, or sixth, etc., generations usually perfectly clean cultures are obtained.

Another method, and one which is much used, is to drop some of the liquid to be investigated into a gallon or so of some distilled sterilized water, on the homœopathic principle. Then, of course, the whole gallon will contain some fungi, so that each drop of a gallon of distilled water will contain perhaps one or two fungi; this drop is then put into a tube with culture liquid. Wherever there are a single fungus or two, it will within twenty-four hours make the tube cloudy which gives evidence that a good crop has been developed of that particular fungi which happened to be in that drop. If there are four or five tubes prepared this way, which show development, it may be found that the four or five tubes will have different fungi.

The best method, however, for the cultivation of fungi is in solid culture soil. The bacteridian substance is smeared upon a solid culture ground, say for instance, a boiled potato, cut in half; the fungi will then develop in that exact spot where it was put. They cannot be lost or mixed like in a liquid; each fungus will develop at that particular spot where it lies, and will form individual little colony. This method was described and used long before Koch, only that Koch has perfected this method. I will now pass around some specimens in order that you may see the beauty of his method.

For instance, it can be readily seen upon this potato that there are at least of four or five varieties, all separately growing in four or five different colonies. The bacteria are fixed at the point, where planted on account of the solid culture soil; they cannot approach one another. Then at the place where they are put they will develop each fungus in perceptible different manner, and form little colonies. So for instance, here will be one colony, here another, and here a third form, and each colony may be a different fungus.

Taking then a fresh potato with a suitable instrument you transplant any one variety of fungus you desire to isolate on the new potato, and a perfectly pure crop will be obtained. For instance, on this potato there is only variety of fungus growing. Here are several pure, and also impure cultures. These contain the red, the yellow and different colors and varieties, all more or less separated, one from the other and representing different fungi. Here are red, yellow, green, rosy, gray, black, etc., colonies; others may be recognized by their mode of grouping; the rapidity of growth also differs in the various species. Here for instance, is a fungus that has been planted two days ago, forming smaller colonies than another planted this morning. A few small spores were placed on the potato, and now it has developed this large mould. It is the crenotrix, existing in large quantity in the air; in some localities in Germany, for instance, it does a great deal of mischief by blocking up the water pipes, sewer pipes and cesspools because of the enormous rapidity of its growth. In a proper temperature moisture it can, in perhaps a month, reproduce tons and tons of this fungus.

These fungui are all easily recognized by the naked eye. One becomes very readily accustomed to recognize these fungi without the aid of the microscope. The microscopical picture of each fungi also is distinct and reveals a special form and shape, and appearance, and sometimes the color for each. Like birds, they can be recognized on the sky by the figure which the mass of them makes in flying in a flock, so you can at once tell the fungi growing upon a solid culture soil by the shape and color the colonies will yield as seen by the naked eye.

These culture experiments are not complicated, they can be made by any one. The methods of isolation are perfect. Instead of potato for culture soil you can use another solid culture soil, the gelatin, or jelly, and the blood serum used—coagulated. This coagulated serum or the gelatin is poured upon glass plates and thus we have a soil which is transparent, and in which we can observe the development of the fungi directly under the microscope.

The jelly above related to forms a standard soil upon which fungi grows; it is prepared in the following manner: To one thousand grammes beef tea (prepared in the regular manner in cold water,) (five hundred grammes of finely-chopped beef in one thousand grammes of water) are added one hundred grammes of ordinary dry gelatin and five grammes of common salt, and ten grammes of peptone.

I will be thankful to any gentleman who can give me some information where to procure it in Philadelphia, and how the substance is prepared. I will be very glad to receive this instruction. It is a dry substance, peptonum siccum.

Bacteria being so ubiquitous, forming such a common admixture in everything, and sticking to everything, the question naturally arises how is it possible to make any studies without getting some contamination from extraneous bacteria. Now this can be readily avoided by a method of sterilizing and purifying the substances by the aid of an apparatus very simple and very perfect. I purposely brought some of the apparatus here to show it to those who want to examine it more closely.

Of course, the best germicide next to application of heat is corrosive sublimate. By washing any substance with corrosive sublimate we purify it from the bacteria; but at the same time if you put any bacteria into a vessel washed with corrosive sublimate they will not grow, so you have to resort to dry and moist heat in sterilizing the apparatus. The best apparatus for sterilizing is a common iron box, as demonstrated here. Is is double-walled with an empty space between the walls, and two thermometers, one for the latter space and one for the interior of the box. Within an hour in an apparatus like this, or within a half an hour the temperature can be brought to three hundred degrees Fahrenheit. The loss of heat by radiation is prevented by the double walls. Such heat absolutely kills every germ which may happen to be on the substance which you introduce into the apparatus.

For the sterilization of the culture substances themselves, and for the boiling of the potatoes, an apparatus like this is used, and sterilization is accomplished by hot water, or hot vapors.

Then again, here is another apparatus much more complicated, by which a constant temperature can be preserved. These apparatus may be seen and examined at any time in the Pathological Laboratory of the University of Pennsylvania.

Now, as to the application as to these methods, for certain useful purposes. We are frequently called upon to give an account as to the amount of fungi contained, the air or water, and other substances.

If you expose a boiled potato, cut in half, or an ordinary glass plate, smeared with gelatin, to the air, a certain number of germs peculiar to the locality will drop down and will develop and multiply at the spot and become very distinct and after twenty-four hours you will see fine colonies of fungi of the various colors and forms, all growing. The fungi you see on these potatoes were all collected from the air and then cultivated. Some are in smaller and some in a larger quantity.

Cylinders like these, containing a little cup with jelly may be exposed in any given locality where you want to investigate the air, for half an hour, or one hour, and then the vessels are corked with a sterilized cotton plug, so that nothing additional can fall into it. In this way we develop the fungi collected, and we can make comparative studies of the air of different localities.

Now in the examination of water the procedure is a very similar one. A given quantity of water, say, for instance, ten cubic centimetres, is mixed with some of the prepared melted jelly. The mixture is poured out upon a similar well protected and sterilized glass plate as used for the examination of air. We have thus the result of growth of fungi from the ten centimetres of water used, or from a known quantity and we can easily calculate how much there would be of the fungi in a gallon or in a ton of the water under examination, and then we make a comparative study of other water which is considered pure from a morphological standpoint.

The same procedure is also followed in the examination of soil. The soil contains a very large quantity of fungi. In fact, up to about a half a yard from the surface the soil is made up nearly to one-fourth of its bulk of fungi; a great portion of what we consider to be inorganic earths are really microscopic fungi.

In conclusion, I will state that about the etiological significance bacteria in diseases, we are very much in the dark yet, in spite of all the work done nothing is made out definite, except in two diseases as stated before. In the diagnosis of some diseases, however, bacteria have proven themselves of late of very great importance, and have now a very great application in scientific medicine. So, for instance, it is certain that a peculiar bacillus is invariably present in the sputum of tuberculosis patients, and that whenever we find these bacilli in the sputum, we can tell that the person has consumption. This is true, because the soil which we find in consumption, the cheesy material in the tubercles of the lung, is the preferable, favorite nidus of these bacteria. So it has become quite customary to look for these bacilli in the sputum. The method of examination is easy, and I think that pharmacists could do it even better than physicians, because it is really a chemical test. This part of the diagnosis of consumption has been brought down to a chemical test: namely, the reaction which this fungus gives with aniline dyes.

As generally known, the principle in staining bacilli rests upon the fact that bacteria absorb and retain aniline dyes more readily than the surrounding animal organic materials do. When sputum dried upon a glass cover, or a section containing them, is well stained, for instance, by aniline violet, and then washed in very dilute nitric acid, only the bacilli will retain the dye, while all the rest of the organic material composing the specimen will be decolorized, and may readily be stained by some other dye without modifying the violet color of the bacilli.

The staining fluids for bacilli we more commonly use are those after Ehrlich's formula, slightly modified.

First Stain.—Watery saturated solution of aniline oil, *five parts;* alcoholic saturated solution of aniline violet, *one part;* mix and filter.

Second Stain.—Watery solution of either vesuvin or of Bismarck brown; filtered.

Direction for Preparation of Sputum and Order of Staining.—Sputum in thin layer smeared upon glass cover and *well* dried; immerse; (a) into first stain for twenty-four hours, (rapid staining being not reliable in doubtful cases); (b) into dilute nitric acid (one to five parts of water) for two or three seconds; (c) wash in alcohol; (d) into second stain for two minutes; (e) wash in water and then in alcohol; (f) dry it and mount in Canada balsam or glycerine. Failures to detect bacilli will occur; first, when specimen consists of salivary mucus instead of expectorated material; second, when sputum too thick or too thin smeared upon cover; third, when not enough heated in drying, or when burned; fourth, when too long in acid; fifth, when too much washed; sixth, when bacilli are absent; seventh, when not recognizing them.

For preparations to be kept, and for tissues, the fuchsine dye is preferable, and certain modifications of method necessary.

A magnifying power of four hundred diameters is nearly always sufficient to detect stained tubercle bacilli. In fact, if we found that where we failed to find bacilli with a good one-fifth objective, neither our one-twelfth Zeiss oil immersion lens nor the Abbé's condenser would reveal any when used (as we always do) for control. If the bacilli are very numerous (as sometimes in lymphatic glands) a mass of them may be recognized easily by the naked eye in a well-stained section as a small stained speck.

MINERALOGY OF PHILADELPHIA AS ILLUSTRATED BY THE MICROSCOPE.

Abstract of remarks made by Dr. Henry Leffmann, at the Fourth Social Meeting, held Tuesday afternoon, January 8th, 1884.

These remarks are made at the request of the Committee of the Alumni Association. In presenting them I wish to say that mineralogy is not part of my professional work. My interest in it is merely that of an amateur.

Many questions will doubtless suggest themselves to those present, and I will be quite willing to answer any such that I can; but I do not promise that all the topics which will suggest themselves this afternoon can be elucidated by me. Indeed, some of the points are so little understood that the leading authorities in this field are at variance. The subject is comparatively a new one. One of the difficulties connected with it is the mechanical difficulty of preparing the specimens. I am indebted for the specimens shown this afternoon to the industry to my first assistant, Mr. William Beam. These specimens are prepared by grinding rocks until they are transparent, and then polishing and mounting. The light that this method throws upon mineralogy has relation to the nature and mode of formation of the rock. You will find for instance in some of the microscopes, rocks that have a decidedly glass-like structure; if crystalline at all, it is only by crystalline appearance scattered through them. The whole appearance of the rock is that of a glass or mixture of glasses; and it has evidently been solidified from the condition of liquidity. A close examination will show that when in a liquid state several different liquids were mingled without perfect mixture—very much as oil may be mingled with water; and when the rock cools, these liquids each form separate solids, and, as the rock is flowing while cooling, the different glasses are drawn out in threads and waves. Some of the specimens here shown are almost, if not quite unique, since they are obtained from the rocks from the Yellowstone National Park, a district which has not yet been examined elaborately according to this method. The rocks of this region are nearly all volcanic in origin; and the specimens which show the glass-like structure are lavas of various colors and composition. Silica is their principal component. When the rock consists so largely of this glass-like material as to be distinctly glassy to the unassisted eye, we have an obsidian. Other specimens are shown in which the glass-like portion is but a matrix in which large crystals are seen, and the rock presents to ordinary inspection no distinct glassy character. Such rocks are distinguished by the name trachyte, doleryte, etc.; but much confusion in this nomenclature still exists.

In all the specimens from the Yellowstone Park, the previously molten condition of the rock is shown by the glass-like matrix. Turning to the specimens from this region, we find that none of them show a similar structure except specimens from a narrow belt of so-called trap, more scientifically doleryte, which is found crossing Montgomery County, in a southwesterly direction. This is evidently a volcanic rock, probably ejected through a fissure in a molten condition. In the neighborhood of Spring Mill, an exposure of this trap shows beautifully the hexagonal prisms such as are seen in the basalt columns of the Giant's Causeway. Some of these prisms are several feet in length, none of them, however, stand out with absolute separation from the body of the rock. On the west bank of the Schuylkill, opposite Conshohocken, a similar hexagonal structure is seen.

The granite and gneiss rocks around this city bear evidence of the action of heat, but not such as to melt them. According to present opinion this was a moist heat. The rocks, indeed, have been called hot mud rocks. It will be seen by the specimens shown that in the section of granite and gneiss, although sometimes the structure is very compact, each component of the rock is crystalline and cannot be recognized as a result of fusion. In the quartz which forms a portion of these rocks cavities containing liquids are seen, and this would be regarded as another proof of their formation in contact with moisture rather than from fusion. One of the microscopes shows a quartz crystal about one-fourth of an inch long in which are numerous cavities containing water and air. Sometimes the quartz crystals contain liquid carbon dioxide in the cavities.

As illustrative of the difficulties and uncertainties of this subject I may mention that during the Summer, in making an excursion in the neighborhood of Conshohocken, for the purpose of collecting specimens, we found on the road leading from Ardmore to Conshohocken, a small outcrop of a blackish rock, the texture of which was very much like that of trap. Specimens were collected and sections made, and also a partial analysis. We were unable to make out the relations of the rock, and sent specimens of the sections to a distinguished mineralogist. He asked for some pieces of the rock. They were sent to him, but no reply has ever been received as to the character of the rock. He stated in his communication that he was unable to make out the rock from the microscopic character alone.

PROSPECTS OF THE PATENT MEDICINE TRADE.

An extract from the *St. Louis Druggist*, read by Dr. A. W. Miller, at the same meeting.

The Philadelphia Retail Drug Trade Association having failed to obtain the unanimous support of the five hundred and fifty-eight druggists of that city to its scheme for maintaining prices on patent medicines, has adopted the opposite measure, and hereafter general cutting will be the rule. It does not appear whether this action was taken as a measure to force manufacturers to protect those who are inclined to sell at full rates, or to compel those who would not sign the agreement submitted to them to reconsider their decision when they find how unprofitable the business will become when all are engaged in cutting prices.

It speaks badly for the state of trade in the Quaker City, when only about one-fifth the number of druggists there were willing to bind themselves to adhere to fixed prices on proprietary medicines, and most of these only on condition that the majority would sign the agreement. When so much indifference to their own interests is shown by the retail druggist, it is hardly fair to suppose that the manufacturers and wholesale dealers will extend the support the retailers are anxious to have, and with which they expect to accomplish so much in the direction of checking the cutting of prices. If they will not help themselves when the opportunity is offered, they cannot expect to receive help from the outside. One of the most depressing circumstances in this war on cut rates is the apathy of those who are to be benefitted. The retail druggist throughout the country seems only just awakening to a realization of the fact that if they expect to win they must bestir themselves, and not wait for some one else to propose and carry out a plan which shall relieve them of the load. They must " pull all together," as Mr. Canning has urged, if they expect to accomplish anything. The promises of manufacturers and wholesalers are very well in their way, but it will not do to wait and see if these promises are fulfilled. Certain it is that these promises will amount to nothing unless the retailers first made a decided move toward bettering their own condition.

The retail druggists should not be discouraged because thus far their plans have failed. It will not do now to abandon the fight, as the Philadelphia Association has practically done, or by resorting to retaliatory measures expect to attain their object. It was admitted in the meeting in which the Philadelphia druggists resolved to abandon the plan of an organization that the general cutting of prices, such as is now proposed, will tend to demoralize the trade to such an extent that it will never recover from its effects. It will be almost, if not absolutely impossible to establish paying prices again after the rule of "each one for himself" has been put into force. Much better it would be to make another trial to organize the trade into an association to maintain certain fixed rates. It cannot be expected that all the druggists in any community can be won over to the cause at once, and that in our opinion is where the Philadelphia Association has made its mistake. It has acknowledged its defeat without making as strong an effort as it might have done to accomplish its object.

Again, we say, do not be discouraged because so far you have seen no fruit of your efforts. Circumstances were never before so favorable for the success of a plan to secure paying prices. The retailers have a national organization, which is growing stronger every day. Added to this, local associations forming, or formed, in various parts of the country, are giving the strongest sort of support to the movement. The wholesale dealers have, in convention, adopted a resolution pledging their support to the retailers, and now the manufacturers, recognizing that it was incumbent upon them to make a move in the same direction, have given proof of their sincerity in the circular which we published in our last issue. It may be, and possibly is true, that this action on the part of the proprietors, is due to the fact that they realize that their own interests are quite as much at stake as those of the retailers; and because they have been brought to see that the trade having become unprofitable to dealers or distributors, it threatens to ruin them, and for their own protection they must take some step to remedy the evil, which would in time involve all branches of the business. Whatever the motive, the fact remains that, with the assistance the proprietors will lend, the retailers can do much more than they could unaided, and if, instead of giving away to despair because of the failure of their plans, they will do what they can to promote the cause in their own neighborhoods, their relief will come all the sooner.

After reading the above article, Dr. Miller said that he did not entirely agree with all the matters advanced, and read a paper he had prepared on Retail Prices of Patent Medicines, as follows:—

It may be premised that the present unsatisfactory condition of the traffic in proprietary articles is so well known, and so universally acknowledged that all introductory or explanatory remarks on this subject would appear to be superfluous. The causes that have produced this condition of affairs are of interest only in so far as the recognition and removal may be productive of advantage to the trade. The immediate attention of the sufferers at present is concentrated on the proper method of dealing with the difficulty under discussion.

The experience of the past few years has abundantly demonstrated the fact that no special professional training or skill is necessary to sell proprietary medicines to the consumers thereof, provided, always, that a demand has been established through lavish advertisement. The manufacturers have also become convinced that in the majority of cases country merchants, grocers, notion dealers and other trades people are even better salespersons for their preparations than druggists are, as the latter very frequently have axes of their own to grind in the shape of various substitutions made by themselves. The contempt for all proprietary medicines and the disinclination to traffic in them, which has so often been expressed by organized pharmaceutical bodies, has naturally caused the proprietors of these articles to take a favorable view of other merchants who are not thus inimically disposed towards them. The arrogant threat of those who would ostracize or "boycott" the goods of those manufacturers who will not tamely submit to their whims, is therefore robbed of its terrors. It is generally admitted that customers must be created for patent medicines before any dealer can be decently asked to invest money in them. It is consequently obvious that the proprietors are entirely independent of the druggists as distributors inasmuch as grocers and dealers in general merchandise will very gladly supply these goods anywhere if the opportunity to do so be afforded to them. Unfortunately that margin of profit which seems to be almost a bonanza to these merchants—10 to 20 per centum—is but starvation wages to the poorly paid apothecary.

Another popular fallacy on this subject, that it would be well to rid ourselves of as speedily as possible, is that low prices do not have any influence on the consumption of largely advertised proprietary articles. It is unquestionably true, that there are many Toodles in this world who buy goods simply because they believe them to be cheap, irrespective as to whether they require them or not. Besides this, very many of the poorer classes absolutely cannot muster the almighty dollar demanded for the guaranteed cure of their imaginary diseases though they may be able to scrape sixty-five cents together, be it by close economy, borrowing, begging, or stealing. Again, many a sufferer will buy but one plaster when he has to pay the full twenty-five cents for it, while he will be very apt to treat himself to a pair of them at the reduced rate of ten cents each, arguing that he will thus be relieved of his aches in one-half the time. If low retail prices have no influence on the consumption of an article, why have the manufacturers of the most popular soothing syrup reduced their rates from thirty-five to twenty-five cents, voluntarily giving up probably more than half their net profits in order to accomplish this change? Why this influx of ten cent sample bottles of so many patent medicines? Surely as these acts are not prompted by pure philanthropy, the reward therefore must be found in the vastly increased sales. In view of these facts, it is an indisputable advantage to the proprietors to have their articles sold at popular prices. This term is to be plainly understood to mean that the more reduced they are, the more popular they will be. The lower the *retail* price of an article, other things being equal, the greater will therefore be its consumption.

On the other hand, the manufacturers as a body have given abundant proof of their kindly feeling and good will towards the pharmaceutical profession, of which so many of them in fact were formerly members. What they ask is that some *feasible* plan be suggested to them, that can be carried into execution without injuring their business interests, and without subjecting them to an unreasonable amount of trouble.

The efforts so far made in this city to ameliorate the existing difficulty, appear to have been unwise, as their only result was to draw public attention to the establishments of those who sold at reduced rates, and thus served as splendid advertisements for these. They were furthermore unwise in their attempts to coerce those who could well afford to ignore the druggists altogether. As a natural consequence, the outcome of this plan of "boycotting" proved to be a lamentable failure. None of the manufacturers ask any one to retail their articles on a ten per centum margin; but if a dealer voluntarily elects to do so, to the manifest advantage of the proprietor, why should the latter be compelled to take repressive measures.

The so-called coupon plan, which has been put into execution by one eastern establishment, does not seem to meet with much favor either among retailers or manufacturers. Both classes object to it chiefly on the score of the infinite amount of trouble which its successful execution entails upon them. In addition, it is frequently urged that in all probability, by the time a sufficient number of coupons of many newly-introduced articles had been collected, the respective factories would have collapsed, their coupons remaining in the hands of the retailers as permanent investments.

One of the most recent measures of relief is that which has been so ably and urgently advocated by Mr. George J. Seabury. It consists, in brief, on calling for contributions from all the sufferers, for the purpose of starting a joint stock pharmacy, having for its avowed object the underselling and ruining of those who sell below established rates. This, like other heroic modes of treatment, is quite as likely to do harm as to do good. It is a two-edged sword, which may do more injury to its owners than to those against whom it is to be wielded. The general public will certainly enjoy a free fight of this kind, and will conclude, that at last the bottom has dropped out of the fictitious values heretofore placed on drugs and medicines. The lack of unanimity, which has so far characterized the meetings of the drug trade, will in all probability, however, prove to be an insuperable obstacle to the successful execution of this scheme. Although Mr. Seabury has generously offered to guarantee the return of the capital thus invested, but few will care to embark in the business of selling goods at or below cost, with no provision for running expenses.

One of the weak points in an argument recently circulated in this city, accompanied by a blank petition for signature, is that no exact definition is given for the terms employed therein. If every dealer who has sold a proprietary article below its standard price is to be branded as a "cutter," we may as well at once accept this opprobious slang title for all of us. Let him that is entirely free from this sin throw the first stone. A still graver error consists in requesting manufacturers not to sell to any one supplying a "cutter." Is it to be expected that proprietors will decline to sell to any one, unless he agrees to become a detective, and to exercise close surveillance over the retail sales of his customers? Or are the manufacturers themselves to employ detectives to ferret out the miscreants who will stealthily accept ninety-nine cents for that which has one hundred cents imprinted upon its wrapper? And is all the trouble to be undertaken solely in the interest of those who have hitherto boasted that they kept all patent medicines hidden from sight, and never sold them, if they could possibly avoid it? It would certainly be far more dignified at once to abandon the sale of these articles altogether, if the compensation for handling them is unsatisfactory, than to crave favors of this kind from those whom we have previously affected to despise.

Is there no way out of the dilemma, no haven of rest out of the turmoil of the struggle for existence? It may be answered, that the salvation must rest on united action, and on the concentration of energy on feasible plans. All visionary schemes and illusory dogmas must be abandoned. Above all, the pecuniary interests of the manufacturers must not be lost sight of, if any aid is to be expected from them.

Perhaps the severest hardships, the most galling phase of the present status of this subject, is a direct result of the rebate plan, as was predicted by the writer when it was first introduced. Under its sanction a large buyer is permitted to sell goods at retail for precisely the same price that all his competitors have to pay, when they cannot afford to purchase an equally large lot. This one point ought, therefore, first to receive the attention of the organized trade association. It is more than probable, that if this subject were properly represented to the manufacturers, if the obnoxious feature of this peculiar grievance were fully explained to them, they would almost unanimously agree to cease selling to those who advertise to sell at low prices. It would be politic to desist from all threats of vengeance in communications on these matters, for the reasons previously explained.

It would also be wise to draw the line definitely on the fact of public advertisement of low prices be it by newspapers, circulars, show cards or otherwise, as the manufacturers will naturally decline to become detectives in the interest of those who insist on full prices. This arrangement will leave every one free to act just as he pleases in regard to prices, but will prevent the larger dealer from annoying his neighbor, for as soon as he advertises low prices he thereby condemns himself, and debars himself from all advantages to which his greater outlay of capital would otherwise entitle him. It may be urged that the present plan is not radical enough in character, and that under its operations grocers will still continue to sell at ten per centum margin. The truth of this assertion is freely conceded, but the druggist will then have the option of profiting equally with the large buyer, who retails simply to gain his rebate commission. It is certainly much more profitable for druggists to be thus enabled to buy a single bottle as cheaply as their competitors can buy five gross of an article, than to league together for the purpose of buying and subdividing the full quantity. The necessary expenses for drayage, freight, insurance, &c., would consume a very large proportion of the rebate, even if the illegality of such a proceeding be totally ignored.

The present plan is so manifestly fair, reasonable and equitable to all the parties concerned in it, that already quite a respectable number of manufacturers decline to sell directly to those who advertise to undersell at retail. Its success, therefore, seems to be assured in advance; when it is accomplished, there will no longer be the anomaly of one man retailing a cake of soap for twenty-one cents for which his competitors have to pay 21¼ cents at wholesale. It would be difficult indeed to point to a more glaring piece of injustice than this in the whole range of business affairs.

RELATION OF PLANTS TO HYGIENE.

A lecture delivered by Dr. J. M. Anders, Ph. D., based upon his own investigations, at the Fifth and last Social Meeting of the Course of 1883 and 1884, on Tuesday afternoon, February 12th, 1884.

Mr. President and Members of the Alumni Association of the Philadelphia College of Pharmacy, Ladies and Gentlemen:—

Your Association has honored me with an invitation to deliver a lecture upon this occasion, which I believe completes the series of social meetings for the present season. The pleasure of accepting this invitation is the greater because of the fact that a distinguished member of your Alumni very kindly suggested a topic for my discourse, to wit: "The Relation of Plants to Hygiene," a subject which has always had great interest for me and is one about which too much cannot be said as it is intimately associated with some of the grand principles of the science of hygiene.

The theme is a broad one and has within the past few years attracted much attention. It would therefore be impossible for me in the time at my command, to present the whole subject in detail and I propose simply to briefly touch upon points of scientific interest alone, and to consider more fully those that are of greatest importance from an hygienic standpoint. I wish to premise further, by stating that much of what I shall bring before you has appeared in my previously published papers, but chiefly in the line of original investigation. Some new light has, however, been recently thrown upon the subject as the result of investigations not yet published, which, I trust, may be the means of exciting trains of thought.

I need hardly stop to remind you of the fact that there was formerly, and in some quarters, still is, perhaps, a superstition that plants and flowers are unwholesome in living and sleeping rooms. It is not a matter of surprise then that plants in Winter were kept in cellars and other apartments, not much used by the family, to be merely kept alive till Spring. Until within a few years, this belief was very general, not only among lay people but the most illustrious professors were in the habit of speaking in strong terms of their baneful effects, particularly in sleeping rooms and the sick chamber. Perhaps, I could in no way give you a more correct idea of the universality of this opinion than by quoting a short extract from a letter on the subject of "Growing Plants in the Sick Chamber," written by my friend, Dr. Hiram Corson, a distinguished physician and well known writer upon medical topics, and published in the *Norristown Herald*, of December 2d, 1881. He writes: "From my observation during many years, I believe that not more than one physician in ten but advised against them. Indeed, I never knew of a single one who gave approval of such a course. So current was the belief of their injurious tendency that the question was not put to the physician at all."

We may now consider for a moment the reasons to account for the prevalence of such an idea and to inquire into the truthfulness or falsity of them. In the first place it must be borne in mind that the notion was not held because plants in rooms were not admired nor because their presence gave no pleasure. The love of plants and flowers has always existed in the hearts of most persons, and though they have very generally been banished from our living apartments in the past this innate affection has during all the ages defied the assaults of this baseless prejudice. Again, their æsthetic and refining influences have never been disputed. Why then should they have been discarded by us so generally or upon what sort of proof was the old notion of their injurious effects based? The answer could be readily given by every school boy of twelve years, and may be briefly stated as follows: Plants at night exhale carbon dioxide and absorb from the air oxygen, thus tending to affect injuriously the harmonious composition of the atmosphere. On the other hand it was once considered safe to assume that the function carried on by plants in daytime, viz.: The absorption of carbon dioxide and giving out oxygen improved the conditions of the air, at least in closed apartments. That these ideas were erroneous has been decided by Max Von Pettenkofer (Pop. Sci. Md. for Feb., 1880), who has experimentally shown that the amount of these gaseous substances, carbon dioxide and oxygen, taken from or given to the atmosphere is too small to have any appreciable effect either for good or evil, even when kept in closed rooms.

This learned inquirer, in his admirable paper, gives the following account of his experiments: "When the Winter Garden in Munich was completed and in use, it occured to me to make experiments on the effect of the whole garden on the air within it. There could not be a more favorable opportunity for experimenting on the air in a space full of vegetation, This green and blooming space was not exposed to the free currents of air which at once immensely rarefy all gaseous exhalations, but was kept under a dome glass, through which only the light of heaven penetrated. Although not hermetically sealed, the circulation of air in such a building compared with that in the open air was reduced over a hundred thousand fold.

"I asked permission to make experiments for several days and nights which was readily granted. Now, what was the result? The proportion of carbonic acid in the Winter Garden was almost as high as in the open air. This greatly surprised me, but I hoped at any rate to have my traditional ideas confirmed. I had hoped to find less carbonic acid in the day than in the night, supported by the fact that the green portions of plants under the influence of light decompose carbonic acid and develop oxygen. But even here I was disappointed, I generally found carbonic acid increasing from morn till evening, and decreasing from night till morning. As this seemed really paradoxical, I doubled my tests and care, but the results remained the same. One day it suddenly became clear to me why there was always more carbonic acid by day than by night, I had only been thinking of the turf, the shrubs and trees which consume carbonic acid and produce oxygen, and not of the men and birds in the Winter Garden. One day when there were considerably more men at work there than usual, the carbonic acid rose to the highest point, and sunk again to the average during the night. The production of carbonic acid by the working and breathing of human beings was so much greater than that consumed by the plants in the same time."

From these results Professor Pettenkofer justly concludes that the amount of carbon dioxide in the air in the Winter Garden cannot be reckoned as telling for or against the hygienic value of vegetation in an inclosed space. These experiments speak for themselves. It should be specially noted, however, that contrary to the old and wide-spread traditional notion that plants by giving out carbon dioxide at night render the air harmful, there was found to be even less of this gas than in the day time. The explanation of this fact is important. It does not attempt to disprove that plants give out carbon dioxide at night, but as Pettenkofer has pointed out the production of carbon dioxide by the working and breathing of human beings in the day time was so much greater than what the plants give off at night, that the latter amount becomes almost inappreciable. There remains, therefore, no valid objection to the practice of keeping plants in our dwellings, not even in sleeping rooms, and the sick chamber. Popular traditions must vanish before the accumulating evidences, the result of scientific research.

Now let us look at the opposite side of this question and consider what may be called the beneficial influences plants and flowers have upon the atmosphere. We shall find that these are manifold and important. The fact that plants have an æsthetic influence as already incidentally touched upon, is acknowledged on all hands. And the pleasure their presence gives by their effects upon our senses, their power to relax tension of mind as well as the feeling of congenial companionship they give, are all evidences of their utility from an æsthetic point of view.

But there are other and far more important hygienic purposes subserved by plants, and chiefly on account of two functions which are in more or less constant operation ; first, transpiration or the exhalation of watery vapors, and secondly, the generation of ozone by flowering plants.

As elsewhere stated, plants act as efficient and perfect atomizers, the amount of their exhalations being quite surprising. In order to show the rate of transpiration I may be pardoned for making a somewhat concise abstract from an experimental essay of my own upon the subject of transpiration. "In clear weather the evaporation by night, as compared to that which takes place in the day, appears to be about in the ratio of one to five. In some cases no loss (by transpiration) occurred on dewy or cloudy nights. Under ordinary circumstances the evaporation at night was about the same indoors as in the open air. The rate of transpiration during the day showed a very different relation, giving a ratio of two to one in favor of the open air. Of the whole amount evaporated during the day, half was given out between the hours of 11 A.M. and 3 P.M., as shown by repeated testing. The average rate of transpiration for soft, thin leaved plants, in clear weather, may be put down at about one and a quarter ounces per day (twelve hours) for every square foot of leaf surface. The lantana shows nearly two ounces to the square foot of surface. The cammillia, with its dense smooth leaves, averaged less than half an ounce to the square foot of leaf surface per day.

"A few calculations may serve to impress the importance of this ratio of transpiration deduced from these experiments. According to the above rate the Washington Elm, at Cambridge, a tree it is stated, of no very large size, with its two hundred thousand square feet of leaf surface, would transpire seven and three-quarters tons of watery vapor in twelve diurnal hours of clear weather."

From such facts as these it may fairly be assumed that the transpiratory function in plants must be a powerful agent in maintaining the humidity of the surrounding medium. But we have at hand ample experimental data to show the correctness of this conclusion.

From observations which I have made over a period of several weeks on the air of my former private reading and sleeping room at the Episcopal Hospital, which was kept warm by air heated by steam, and simultaneously on the air outside, it was found that the air in the former position was appreciably dryer than in the latter, the average complement of the dew point being on the whole about five degrees greater. The room adjoining mine, occupied by my colleague, was very kindly left for a time at my disposal, In it were kept a few plants in pots with a leaf surface not exceeding about twelve square feet. The dimensions of the rooms were similar, each being twenty feet long, eleven feet wide and sixteen feet high. Each had one window fronting east, in which the plants were kept. The average temperature and dew point were noted simultaneously, and the result showed uniformly, for a period of eighteen days, that the complement of the dew point averaged one and a half degrees less in the room containing the plants. These observations were made during April, 1878, when very little heat was required, still the windows and doors were kept closed during the day. Calculating from these results, the effect of twenty-four square feet of leaf surface on the air of a room half the size of the above would be to increase the humidity sufficiently to raise the dew point six degrees Fahrenheit higher than it would be if there were no plants in the room. It was possible that the variation in the amount of moisture in the two rooms tested might be due to considerations other than the presence of the plants, it was deemed necessary to vary the conditions and make further observations. Accordingly after placing some plants in the window of my own room, I took the average temperature and dew point, and compared them with those of an adjoining room containing no plants. No artificial heat was required during the time of these experiments. It was found that when the window was kept open so as to cause very free ventilation, no appreciable difference in the humidity of the two rooms was observed, but if the windows were kept closed for a few (say three) hours, it would make a difference of from one and a half to two degrees in the complement of the dew point, the room having the plants showing the lesser complement. This difference was maintained almost when the windows were opened just enough to allow a gradual interchange of the contained air; but, as before intimated, a draft, though it might hasten transpiration, would by carrying off the vapor, prevent an increase of moisture in the air of the room. It is well known that the air of our houses contains too little moisture. This is particularly the case where dry air furnaces are used for heating purposes. About four years ago I had made under my personal control, some observations with a view of determining more precisely the extent of the difference between the humidity of apartments thus heated and the outer air. To my surprise it was found that the mean average complement of the dew point was seven degrees Fahrenheit greater for the heated air than the air outside. Now it can be readily seen that under these circumstances, a certain number of plants in a heated room would have the effect of raising the humidity to the healthy standard through their powers of transpiring aqueous vapor and thus render great hygienic service. In order to fully appreciate the value of house plants in this connection, it will be necessary to take into consideration the evil consequences to health resulting from dry heat. This question is one of great interest, but time is wanting to treat it fully here; suffice it to state briefly the most important hurtful effects,* as described by Prof. A. Stille, to wit: "A great demand is made upon the system to supply the air with moisture; the skin and pulmonary mucous membranes are dried, and a condition is induced which is expressed in irritability of the nervous system, paleness and susceptibility of the skin to cold, liability to pulmonary diseases, and, in a word, deterioration of all the functions." If plants are capable of obviating such distressing symptoms in consequence of this function of transpiration increasing the atmospheric humidity, we must consider this an office of no mean importance.

The generation of ozone by plants, the other function alluded to, which brings them into hygienic importance, deserves careful consideration. The experiments which led to the discovery of this function in plants have not yet been published, but will appear in the *American Naturalist* for March, 1884. Time would fail me were I to attempt to give a detailed account of these researches here, but a brief summary of the most important results seems incumbent. My first observations were conducted in Horticultural Hall, Fairmount Park, for I thought this place afforded a good opportunity for settling the question whether plants do or do not generate ozone, but in this I was measurably disappointed. The air of the main hall, and also the smaller side houses was tested for ozone with almost entirely negative results. During these experiments there were numerous visitors attracted to the hall on account of the great beauty of the plants, and this circumstance it was thought might be the cause of the failure of the tests, since it is a known fact that ozone is never detectable in occupied dwellings to which the hall, during the time of these observations, might have been very justly compared.

Later experiments at a time when the hall was frequented by comparatively few or no visitors, gave somewhat more encouraging results, but they were not thought sufficiently striking to base thereon positive conclusions.

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*See Beneficial Influence of Plants; by the author. *Amer. Nat.*, Dec., 1878.

In this series of experiments the external air was simultaneously tested for the sake of comparison between the air on the interior and that on the exterior, and it was observed that the results were nearly identical in the two situations with a preponderance of reaction in favor of the exterior, thus leading naturally to the opinion that the external conditions might have affected the results on the inside. An exception, however, must be noted in the case of the so-called propogating house; here the results were more striking than those upon the outside. This circumstance was due to the fact that this house was filled with flowering plants, as will appear hereafter.

It became clear that more efficacious apparatus was necessary. Accordingly, I had constructed a glass casing large enough to hold a dozen or more thrifty plants in pots. Such an arrangement, while it admitted the sunlight to the plants, likewise confined their exhalations to the air within the case. The ordinary tests for ozone (schoenbein and guiaicune papers) applied to this atmosphere, gave very satisfactory results. When foliage plants alone were employed no reactions indicating the presence of ozone were obtained. On the other hand, when flowering specimens were experimented with, such as petunias, geraniums, fuchias, bigonias, hydrangias, etc., really beautiful reactions occurred. No result was obtained on rainy days, though the plants were amply protected from the rain. This function is according to these experiments, only excited under the influence of the sun's rays or good diffused light. The case was filled many times with different varieties of flowering species and invariably they gave evidence of causing the generation of this substance. The various substances known to answer to like tests were carefully precluded by applying other tests peculiar to themselves, so that there could scarcely be a source of error. From the data gained by these experiments the following conclusions were deduced: First, that flowering vegetation in general, during the day in fair weather, generates ozone. Secondly, that foliage plants do not possess this power. Thirdly, that the amount of ozone generated by flowering plants is sufficient to make them of decided sanitary value. I owe my thanks to Mr. G. B. M. Miller for much assistance in these experiments.

Let me remind you in passing that vegation is largely blooming, that numerous field plants, the forest trees, as well as fruit trees put forth flowers and that during this period they all add their quota of ozone to the surrounding medium. In order to fully appreciate the importance of this *ozonizing* action of flowering vegetation, it is necessary that I should call your attention for a moment to the sanitary value of ozone. It is generally acknowledged that ozone, through its oxidizing properties, purifies our atmosphere, ridding it of organic impurities, and even disease germs, which are the cause of various forms of suffering, and render the air too much polluted for breathing purposes. The fact that it is not detectable within our dwellings nor even to the leeward of large cities, places where these decomposing organic substances are present in greater proportion, shows clearly that it is consumed in their oxidation.

Prof. Max Von Pettenkofer makes the following statement in regard to the happy effect of ozone upon the atmosphere: It is the constant purifier of the atmosphere from all organic matter which passes into it, and might accumulate. The air would have been long ago filled with the vapors of decomposition if it were not for ozone, which oxidizes all that is oxidizable, if only time enough be allowed for it and not too much be expected at once.

Having now shown the value of ozone as a hygienic agent it becomes evident that flowering plants acting as natural ozonizers must take a front rank as sanitary agencies. If the presence of ozone is of so great importance in the external atmosphere must not its presence within doors be doubly important since it is a fact, unhappily, too well known, that the air of our dwellings is charged with deleterious substances. due to such causes as human respiration, the escape of sewer gases, etc. Again, the fact should not be lost sight of that we spend the greater portion of our lives indoors and are, per consequence, obliged to exist in and respire a more or less vitiated atmosphere during this time.

I have now hastily brought to your notice the effect upon the atmosphere of the two plant functions, the transpiration of aqueous vapors and the generation of ozone. Stronger evidences of their sanity value, particularly in inclosed apartments, could scarcely be necessary to convince the most skeptical. It follows that plants should be welcomed into every household. For ordinary hygienic purposes the following proportion of plants may be taken as a good standard. Given a room twenty feet long, twelve feet wide and ceiling twelve feet high, warmed by dry air, from a dozen to eighteen thrifty plants with soft, thin leaves, and a leaf surface of six square feet each, would, if well watered, and so situated as to receive the direct rays of the sun (preferably the morning sun) for at least several hours, raise the proportion of aqueous vapor to about the health standard.

Your attention will now be directed to other spheres of usefulness plants have growing out of the two functions already considered. Experience as well as reason teach us there are many ailments which are benefittted by a moderately moist and warm air, but chiefly affections of the lungs and air passages. It is in the great majority of the diseases belonging to the latter class that dry artificial heat does such great mischief. Among the more common diseases affecting those organs may be mentioned acute and chronic catarrhal inflammation of the larynx and bronchi as a result of colds, all of which conditions are improved by a proper degree of humidity of the atmosphere in the living and sleeping rooms. The most distressing symptom in these cases is cough which is rendered less troublesome by the constant inhalation and atomization of a more or less moist atmosphere, such as is furnished by a sufficient number of plants. The remedial effect of such an atmosphere upon the diseased mucous membrane as a means of reducing inflammatory action is quite noticeable. The proportion of plants necessary varies with the nature of the case and cannot here be indicated, but it may be stated that in a general way acute diseases require a greater profusion of plants than the more chronic forms, because the former require a more humid air in their treatment. The formula already given, it should be recollected, is intended to serve as a guide for sanitary purposes only, and not in conditions of actual disease.

Perhaps in no other condition of disease do plants and flowers offer such promise of becoming valuable therapeutic agents as in that dread and awe-inspiring disease, consumption of the lungs; and more especially do they seem to be effectual in preventing the development of the disease. Having made this assumption it will be necessary to adduce evidence from practical experience in support of it, in order to entitle it to credence. In a previously published paper I gave a somewhat detailed account of a personal visit to thirty gardeners and florists of Philadelphia, the object being to ascertain the effect upon health of these pursuits. The result was to the effect that while in some cases they appeared to favor rheumatism, on the other hand they uniformly arrested the tendency to lung disease, in other words, prevented consumption. Since that time I have made inquiries of several others engaged in the same avocation and with the same results. The histories of some of these florists furnished evidence of the most convincing character. To give an instance, Mr. W., thirty-two years of age, had been following the pursuit of a gardener and florist from his boyhood days up to the time I saw him, some twenty years. He stated that he worked continuously among his plants, and during all these years enjoyed good health. There was a marked history of consumption in his family, having lost a father and brother with the disease. As the histories of both the latter bear upon the question under consideration—both having been at one time florists—I will briefly outline them. The father followed the calling of florist from early life until sixty years of age, and during all that period, nearly half a century, enjoyed good health. When sixty he assisted at the erection of a church, and accidentally fell from a height, injuring his ribs, which disabled him for work. But a few months later he went into consumption, which carried him off rapidly. The deceased brother had also been engaged as a florist from his boyhood until within a year of his death, which occurred at the age of thirty-six years. And during the time he followed his old avocation he had good health. About a year before his death he forsook his calling and took a store in the same city, and almost simultaneously he became a victim to consumption, which speedily caused his death.

Now does it not appear as though the facts, that the father was unable to work among his plants on account of the injury he had received, and the son having forsaken his life calling, may have had something to do with the development of the disease in these unfortunate subjects? Instances of this sort might be greatly multiplied both from my own recorded observations and the reported cases of other writers corroborating the same view, but time is wanting.* I am inclined, however, to make another extract from the excellent letter of Dr. Hiram Corson, to the *Norristown Herald*, already quoted from, bearing upon this point, and which, so far as I know, has not been re-printed in any other journal or paper, but is none the less important. After detailing the case of a relative, who, at the age of sixty years, was in the incipient stage of consumption, and who was a great lover of plants and flowers, living among them continually until she reached the age of eighty-five, the prolongation of her life being ascribed to the beneficial influence of the exhalations from her numerous plants, he continues: "her cousin, a well known botanist of Delaware County, whose only brother and sister died of consumption in middle age, lived among his plants to the age of seventy; and his brother, a well known botanist of this county, who spent much time in his greenhouse, still lives at the age of ninety-four, while his daughter, who from early girlhood to the present hour. has been a botanist, and for more than forty years a practical cultivator of plants, in hot and greenhouses, is strong and healthy as she now approaches her seventieth year."

The above cases are perhaps conclusive evidence of the power plants possess to promote health and particularly in the case of those who have an hereditary tendency to lung disease.

In order to obtain the best results it is necessary that both the living and sleeping rooms should be arranged for the purposes and well stocked with foliage and flowering plants, and the person or persons for whose benefit they may be employed should assume the care of the plants which soon, to most persons, becomes a pleasing occupation, and affords the plants a better opportunity of accomplishing good results as it brings them—patient and plants—into closer contact. With regard to the question of the amount of plant life necessary to have the desired effect in these cases it would perhaps be impossible in the present state of our knowledge to lay down a limit, but since any number of plants would be harmless, it would be well to err, if at all, on the side of an excess. I should advise, at least, twice the number as

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*See House Plants and Lung Disease; by the author. *Trans. Penna. State Med. Association*, 1883.

laid down in the formula for ordinary hygienic purposes—in other words, let there be a profusion of flowering and foliage species, and let them be cultivated indoors and out. The rooms should be of good size and if possible the living room should have a southern exposure, the sun's rays being the chief excitors of transpiration and probably also of the function of the generation of ozone by plants. I have already stated that the beneficial influence exerted by house plants in preventing the symptoms of consumption from developing in those predisposed, has hitherto been ascribed to the effect upon the atmosphere of the function of transpiration and this was the only explanation that could with any show of reasoning be given until the present time. Now, however, since we know that flowering plants are also natural ozone generators, we must give some share of the credit to the salutary effect on the air of the ozone produced by the plants.

It may now be fairly assumed, according to the majority of authorities, that the bacillus tuberculosis discovered by Dr. Koch, of Berlin, is the cause of consumption. Grant that as some authorities maintain ozone has the power to destroy disease germs (and this would include the bacillus which causes this dread disease) and we have an easy explanation of the action of flowering plants in preventing the disease in question, for if the latter have the power to generate ozone they indirectly destroy the activity of the tubercular germs. It should be here stated that even though the air of a living room filled with flowering plants should show no ozone upon testing this fact would not disprove its presence for there are many sources of error in making experiments under such circumstances. In the first place, ozone is rapidly consumed by the various impurities present, and secondly, as Dr. Nicholson has pointed out, the carbon dioxide in such an atmosphere, in consequence of human respiration, prevents the action of ozone upon the test papers.

The value of ozone in cases of consumption is too well known to need further comment here. The benefit to consumptive invalid from a residence among the balsamic vapors of the pine forests, is by some thought to be ascribable to the presence of ozone, which, according to Dr. Schreiber, of Vienna, is due to the action of the *terebinthinate* vapors upon the oxygen of the atmosphere, converting it into ozone. We have then to account for the favorable influence of plants in preventing this most fatal of all diseases by the combined action of flowering plants as natural ozonizers, and that of plants as natural atomizers of moist, and, perhaps, even medicated vapors.

Assuming then that our premises are correct, are there not good reasons for making a more extended trial of a method of practice at once so available and withal so agreeable, being within reach of rich and poor alike? I do not wish to say dogmatically that failures might not occur, in some cases where phthisis is apprehended, particularly if the disease should already have made considerable ingress, as is sometimes the case before the patient or his friends are aware that much is wrong, but I do believe that the facts of the case warrant the statement that under proper regulations, house plants of the blooming and foliage varieties constitute a most valuable prophylactic measure against consumption and bronchial diseases.

It has already been intimated that plants are of great service in cases of confirmed consumption, and there is considerable evidence, the result of practical experience, to lend support to this idea. It is very much the fashion of the day to advise a change of climate in cases of phthisis, and it is the universal opinion of physicians that the change should be made as early as possible if a cure is to be effected. It is within the knowledge of nearly every one, that even when apparently judiciously advised, disappointment follows disappointment as the patient drags himself from one famous resort to another, until finally he finds himself unable to make long journeys, and being desirous of returning home, he makes another effort, death often overtaking him before he reaches those he loves.

It has been found that a convenient and efficient substitute for a Winter or Summer health resort can be secured by simply stocking the living and sleeping apartments of the patient with growing plants in winter, and living among and cultivating them out of doors in Summer. A greenhouse would serve the purpose admirably, the most important requirements being a room of good size filled with plants, and the influence of the direct rays of the sun for several hours daily. In these cases it is particularly desirable that the care of the plants should be entrusted to the patient, if his strength will admit of it, as this insures a certain amount of physical exercise.

There are several important advantages possessed by our home health resort over the ordinary mountain and seaside resorts which are constantly being urged upon the attention of the public. I have already alluded to the fact that such an resort is both agreeable and convenient. It is, however, chiefly in its inexpensiveness that the strongest commendation lies, since the poorer classes of patients are for financial reasons unable to make the necessary sojourn at any of the reputed resorts. Again, by the present method we avoid the fatigue incident to long journeys as well as the separation of the patient from all the endearing relations of home.

I have thus hastily glanced at some of the most important and interesting practical phases of our subject, but to do it justice would demand several lectures of the length of this one. I trust, however, that enough has been brought forward to awaken an interest in the subject in, at least some of my hearers, and that more practical cultivators of plants will be the result. Within the past few years I have been frequently gratified by statements from friends and strangers whom I chance to meet, to the effect that having learned of the beneficial influence exerted by house plants they had indulged their pleasure by commencing to cultivate them, and in no case have I learned that the slightest inconvenience followed such a course. Encouraged by such favorable reports may I not be pardoned for hoping yet to see the day when the practice shall have become a thing universal? And the language of every household shall be:

> " The roses clustering o'er my portals
> Bid welcome to you fellow mortals."

Upon the conclusion of the above lecture, the following remarks were made upon the subject:

Dr. A. W. Miller:—Mr. President, I look upon the discourse to which we have just listened to as being one of the most important that has been delivered during the present Winter course, and one that has a peculiar application to the audience to whom it is addressed. We have here an audience composed of druggists, or those about to become druggists, gentlemen who by the avocation which they have chosen are compelled to live for the greater part of their lives within very narrow confines, and to whom the considerations suggested by Dr. Anders are peculiarly valuable. I trust that all who have heard this discourse will profit by it and that many who would otherwise fall victims to the ravages of consumption may, by an observance of the suggestions here made, be enabled to demonstrate the soundness of the doctor's theory.

A number of important points struck me with much force while the paper was being read, concerning which I would like to have a further explanation from Dr. Anders. One of these is, whether the production of ozone from flowering plants is modified by the non-odorous qualities of the plants; in other words, whether odorous plants are as powerful in producing ozone as those that are non-odorous. It is generally held that odorous bodies, in giving off their odors, are in that manner oxidized and thus give ozone. It has occurred to me that, if that is correct, and if we can obtain ozone by means of exposing essential oils, we would prove that there is a hygienic value in perfumery. All perfumery is composed of essential oils and, while exposed, is not only agreeable to the nostrils but very probably has a hygienic value in giving off ozone.

Dr. J. M. Anders remarked:—When I first began making experiments with flowers in a case, I anticipated that odoriferous flowering plants would be the only ones to generate ozone, but, upon one or two occasions, I found that these did not generate ozone to any greater extent than it was generated by other flowering plants having either no odor at all or a very slight odor. Geraniums, for instance, filled the case at one time, and I obtained beautiful results from using geraniums alone. I do not know whether you would place those among the odorous flowering plants or not. The leaves have a slight odor, but my belief is that the function of generating ozone is confined entirely to the flower. However, I could not say positively as to that.

Foliage plants on the other hand, I found generated no ozone whatever, at least gave no reactions. That fact, to my mind, shows pretty conclusively that the function of generating ozone should be relegated entirely to the flower as distinguished from the leaf. I could not say positively whether the presence or absence of odor in the flower would be material.

Dr. A. W. Miller further said:—It seems very difficult in that case to find a chemical explanation of the phenomenon. For my part, I must confess I would be at an utter loss to account chemically for the production of ozone simply from flowers that have no odor. Then, on the other hand, if the odor is a factor, we would have the production from plants, the leaves of which contain essential oil, such as the *lemon trafolium* (*aloysia citria odora*), whose leaves are strongly impregnated with essential oils in the same manner as the leaves of the turpentine plant. I do not think I have, thus far, seen it stated that the ozone in a pine forest is to be found only at the period of flowering. It is generally stated that a residence there at any time of the year is equally beneficial. With reference to the geranium leaf, my idea is that the production of the ozone is due to the essential oil. It matters not whether that essential oil is in the flower or in the leaf. It is known that the geranium leaves are highly odorous and contain a large amount of volatile oil.

Dr. J. M. Anders in reply said:—In a paper not yet published, in explanation of the generation of ozone by flowering plants, I have given an explanation of this sort; that in the seeds of many plants there is a larger proportion of phosphorus combined as phosphates. We know that we can generate ozone by suspending phosphorus in a moist atmosphere; and it occurred to me that, there being a strong metamorphosis of the phosphates in the directions of the seed during flowering and following that period, in some way or other the generation of ozone was connected in part at least with the development or formation of the seed. The phosphorus might probably be liberated in the seed by the chemico-vital interchanges going on in the seed during the process of flowering and subsequent to that period.

Dr. A. W. Miller:—I do not think there would be any possibility of generating ozone in the manner described. It might possibly be such as might exist in potoplasm or some of those albumen oils; but when phosphorus has once combined with its maximum amount of oxygen for the formation of phosphates of phosphoric acid, you can only liberate that oxygen by a powerful furnace heat, in which carbon is used.

DR. ANDERS:—That is just the point that I wished to make; that that proportion of the phosphorus which is afterwards liberated, might act on the moist atmosphere, and in that way generate this substance that we know of as ozone.

DR. A. W. MILLER:—So as to take the oxygen over to the carbon and thus liberate the phosphorus.

MR. WALLACE PROCTER:—I would ask Dr. Anders that if the ozone as produced by flowers is so effective, whether ozone produced artificially has an equally beneficial effect. We know that we can procure an indefinite supply of ozone by galvanic means. Does that ozone, if allowed to disseminate itself in an apartment, have the same effect as it would have if the atmosphere was moist or if the ozone was produced by flowers? Or does it vary in some way when produced by natural means?

DR. ANDERS said:—In answer to the gentleman's question, I will say, that as yet we are unable to say whether the ozone generated by plants does or does not have any additional virtue as compared with that produced artificially. For one, I do not think it has; but the natural mode is not only a more pleasant, but a more convenient mode.

DR. A. W. MILLER:—Another consideration is this: A beautiful way of proving the immense amount of moisture that is exhaled from plants, as referred to by Dr. Anders, is furnished by the sunflower, which is used to dry up marshes, and again by the eucalyptus tree, which, as is well known, has been employed in malarial districts because of its property of exhaling the moisture and thus exterminating the germs of malarial fever. I think it is generally well known that the value of the eucalyptus tree as a febrifuge lies not so much in the medicine prepared from it as in the cultivation of the tree as a means of destroying disease-producing germs.

I have seen it stated that the *Campagna*, in the vicinity of Rome, which was at one time regarded as one of the most unsalubrious portions of Italy, is now healthy and becoming inhabitable simply because of the planting of the eucalyptus tree there by a society of monks, who made it their business to retire into this malarious district and cultivate plants there for the purpose of reclaiming the soil.

Obituaries.

PHILADELPHIA, March 17th, 1884.

To the President and Members of the Alumni Association, P. C. P.

GENTLEMEN :

We, the undersigned, herewith present our Report on Deceased Members for the preceding year. The following list comprises as far as your Committee could ascertain, all the loss the Association has sustained that has not been previously reported.

It is to be regretted that additional information could not be obtained in reference to *Messrs. Ritter and Parker, but this was precluded by reason of the recent date of death.

HENRY W. LESLIE (Class 1862,) died at Parker's Landing, Pa., on the 14th day of February, 1882. The cause of his death was softening of brain, superinduced by paralysis, from which he had suffered two years. Mr. Leslie (who was born in Mauch Chunk, in 1832), first entered the drug business in Easton ; after remaining a year he went to Bristol, at which place he continued the business for over ten years. After spending several years in Philadelphia and Titusville, he commenced (in 1870), the practice of medicine at Parker's Landing, and devoted himself to his profession till the time of his death. Mr. Leslie graduated from the Philadelphia College of Pharmacy in 1862, and became a member of the Alumni Association, September 9th, 1865.

JAMES STRATTON (Class 1851,) died at Bordentown, N. J., March 23d, 1883 : he was born at Snowhill, Md., Nov. 21st, 1829. Mr. Stratton received his school education in Woodbury, N. J., and in Philadelphia, and graduated from the Philadelphia College of Pharmacy in 1851 ; after a term of four years in the service of Messrs. Powers and Weightman, he opened a pharmacy in Bordentown where he continued until his death. Mr. Stratton was always an actively useful citizen, occupying positions of trust and responsibility, and taking especial interests in matters concerning the welfare of young people. He assisted in organizing the Young Men's Christian Association of this city, and was chosen its first Vice-President. He joined the Alumni Association in 1866, and in 1879 he delivered the Annual Address. As one of the earliest members of the New Jersey Pharmaceutical Association he was deeply interested in its success, and was elected its President in 1873.

EDWARD PEAT, M. D. (Class 1878), died of acute consumption, at Delphos, Ohio, on the evening of Thursday, April 19th, 1883, aged 28 years 3 months and 19 days. He was born in Montgomeryshire, Wales, on January 1st, 1855. Both his parents died when he was but nine years of age ; two years after their death he came to the United States in company with his sister and three brothers, and settled at Gomer, Allen Co., Ohio. In 1870 he removed to Delphos and entered the drug store of Shark & Long, after learning the business with this firm and remaining with them until April, 1876, he came to Philadelphia and entered the pharmacy of Wm. C. Bakes. While with Mr. Bakes he attended two courses of lectures at the

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* Information collected since the report was received.

Philadelphia College of Pharmacy and graduated in 1878. Shortly afterwards he was employed by Wm. E. Krewson with whom he remained one year, when owing to impaired health he accepted a position for the Summer in the store of F. P. Philbrich, at Ocean Beach, N. J. Returning to Philadelphia in the Fall he attended lectures at the Jefferson Medical College from which institution he graduated with honor in March, 1881. In the Spring of 1881 he returned to his adopted home at Delphos, Ohio, where he began the duties of his new profession, his practice rapidly developing through his attention. During the Fall and Winter of 1882 and 1883 his health began to fail and feeling confident that change of climate and a few months rest would restore him, he went to Florida, but the trip proved of no avail; notwithstanding that he received the best attention he rapidly sank until finally the summons came. Thus passed away a kind and affectionate brother, a firm and enduring friend, reliable at all times, a young man of good judgment, conscientious to his duty and profession; a consistent member of church who did not forget his vows or the early teachings of Godly parents. Edward Peat joined the Alumni Association, February 24th, 1879, and while residing in Philadelphia was an active and faithful member and always manifested a lively interest in its affairs.

LAWRENCE AUGUSTUS NEUHART (Class 1883), died suddenly, at Columbus, Ohio, on Thursday, June 7th, 1883. He was born December 14th, 1861, at Woodsfield, Ohio, and received his education in the common school of his native place; he also attended the High School until 1877, when he went to Caldwell, Ohio, and entered the drug store of his brother, D. Neuhart, Jr., with whom he learned the business. At the end of two years he was taken into partnership by his brother, and through his energy and foresight the business rapidly increased. During this time he had in view the possibility of attending lectures at the Philadelphia College of Pharmacy. Successful in his anticipations, he graduated in March, 1883. Mr. Neuhart was a young man of unusually good traits, possessing a business tact and energy that would have been creditable in one of more mature age. His close application to business secured him the respect and esteem of his employers in every line of duty to which he was called, and his loss is keenly felt, not only by his immediate friends, but also by the community in which he lived.

EUGENE D. RITTER (Class of 1873), died in Philadelphia, on Saturday, March 1st, 1884. He was born in Bethlehem Township, Northampton Co., Pa., in 1850. He received his education in the vicinity of his birthplace. At the age of twenty he began business for himself and was the proprietor of a coal yard at Broadhead's station in Bethlehem Township, his native county. The business not being suitable to his tastes, he came to Philadelphia in 1870 and embarked in the drug business—entering the store of Wm. Opdycke, at the corner of 13th and Jefferson streets, where he remained until his graduation in the Philadelphia College of Pharmacy, in March, 1873. The subject of his thesis being *Atropa Belladonna, Toxicologically considered.*

In April, 1874, he went to Dubuque, Iowa, and entered the employ of W. H. Torbert, as prescription clerk, where he remained until June 19th, 1876, giving entire satisfaction to his employer, who writes as follows: "I have found him uniformly kind and courteous to customers, just in observing my interests, of unimpeachable integrity, exemplary habits, thoroughly conversant with the drug and prescription business, accurate and careful in compounding." After leaving Dubuque, he returned to Philadelphia and was clerking in the store of Jos. Bernheimer, No. 933 N. 2d street, where he remained until he went into business for himself at Kensington avenue, where he remained but a short time when he closed it out and opened a pharmacy at the S. W. Corner 6th and Thompson streets, June 7th, 1877, where he successfully carried on his profession until May 1st, 1880, when he sold out and relinquished the drug business for a time and went into the oil refining, remaining in this for a year or so, he then re-entered the drug business and opened a store at the corner of 7th and Diamond streets, where he continued for about two years and then sold out his Pharmacy, and from this time until his death was clerking in various stores. He joined the Alumni Association, Feb. 27th, 1874. He was buried from the residence of his mother, near Bethlehem, Pa., on Thursday, March 6th, 1884, and was interred in the cemetery of the Hecktown Church.

James A. Parker (Class of 1873), died at Atler's Hotel, Colorado Springs, on Tuesday, March 4th, 1884, where he had gone three weeks previously in quest of health, having been afflicted with that dread disease, pulmonary consumption. He was born in Philadelphia, September 2d, 1852. He first entered the drug business in the store of Herman A. Vogelbach, Ph. G., No. 1716 Frankford avenue,— within three squares of where he was engaged in business at the time of his death. While in the employ of Mr. Vogelbach he attended the Philadelphia College of Pharmacy, and graduated from that institution March, 1873. The subject of his thesis, *Scutellaria Lateriflora*. He was elected an active member of the College the same year. He also became an active member of the Alumni Association, taking out its certificate of membership March 18th, 1873. At the organization of the Zeta Phi Alpha Society of the College, he became a member, and was elected as one of the Executive Council. Also when the Trade Association was formed he took an active interest, and was elected Vice-President, both of which positions he held at the time of his death. He also was a member of the Pennsylvania State Pharmaceutical Association, Receiver of the Fuel Savings Society in the Eighteenth and Nineteenth Wards of Philadelphia, and Treasurer of the Society for Organizing Charity. After his graduation he remained with Mr. V. until September 1st, 1875, when he entered the employ of our fellow-member, Chas. W. Hancock, Ph. G., of West Philadelphia, remaining with him until March 15th, 1876, when he opened a pharmacy and began the cares of business for himself at 1871 Frankford Avenue. He built up here by his energy and perseverance a large and prosperous business, and in the Fall of 1883 he removed a square below, to one of the handsomest stores north of Girard Avenue.

Mr. Parker was known and acknowledged as a gentleman of unexceptional character and sterling principles. He was a Christian in every sense of the word, not merely a professor of religion, but an active, energetic worker, and always carried himself correctly by his example, and would never allow any companion to mislead him, nor would he ever try to force others to do and think as he did, but took the more noble way of setting them the good example. He was a warm friend and genial companion, one with whom it was a pleasure to hold intercourse. By his gentleness of character and pleasing manner he made himself a favorite among all with whom he came in contact, as was fully attested by the large concourse of sorrowing friends who followed his remains to their last resting place. As a pharmacist he was energetic, ambitious and upright, and an advocate of everything that was honorable in this profession. Our Association has lost one of its best members, and whose loss we all will feel.

His stricken family has our sympathy in this their hour of sorrow; but He who has taken their loved one to Himself doeth all things well.

Respectfully submitted,

Chas. Fred'k Zeller,
John E. Cook,
J. W. Worthington,
} *Committee.*

INTRODUCTORY LECTURE

TO THE

Course of 1883 and 1884,

AT THE OPENING OF THE

Sixty-Third Session of the Philadelphia College of Pharmacy,

DELIVERED ON

MONDAY EVENING, OCTOBER 1st, 1883,

BY

SAMUEL P. SADTLER, Ph. D.,

Professor of Chemistry.

Students of the Philadelphia College of Pharmacy:

GENTLEMEN:—The sciences of to-day present, as might be expected, a very different aspect from the same branches of knowledge as they appeared fifty or sixty years ago. It is not merely that the mass of observations in most of these lines of study has enormously increased during this interval. Were that all, the change could hardly be considered as an unmixed benefit, because of the increased difficulty of assimilation of this additional matter. Many would be the contradictions in the observations and hopeless would be the task of bringing order out of such a chaos. The advance in the several branches of knowledge has been largely one resulting from improved methods of study, rather than one following simply from diligence in the application of the old ways.

Let us turn to chemistry for our illustration of this. The chemistry of the last century and the early decades of this was largely a descriptive science, such as the natural history branches, zoology, and botany are still in great part. Reasonably exact mineral analyses were made, it is true, but the laws of chemical combination and the fundamental conceptions of atoms and molecules had not been as yet generally established. Now, this want of comprehensive views of chemical reactions, their why and wherefore, was bad enough as it affected the study of inorganic and metallic compounds, but what must have been the conditions for studying the complex compounds of carbon, so widely spread in the vegetable and animal kingdoms. Their number is so enormous that, in the absence of any established relationships, not much more than a mere enumeration was possible for the student of this branch of chemistry. It is only within the last twenty years that chemists have attained to any comprehensive views at all in the domain of organic chemistry. It has been found possible to gradually range most carbon compounds under two categories, either as marsh-gas or as benzol derivatives, as fatty compounds or as aromatic compounds. To do this, methods of analysis very different from those used in mineral chemistry had to be applied. The mere finding out of percentage composition tells us little or nothing about an organic compound. What the elements are that compose the compound is not to be found out. That can be told beforehand with almost absolute certainty. What is wanted is to know how the atoms of carbon, hydrogen, oxygen and nitrogen are linked together, for, strange to say, these differences of groupings, which may be found to exist between these three or four elements, endow the compounds with radically different properties and serve us as a basis of classification.

The development of this part of chemistry, therefore, required very different methods of research. Instead of at once destroying a compound in order to learn of what elements it was composed, we submit it to a course of treatment with reagents, which take it apart very gradually, or modify it in the production of some related substance. In this way, we are enabled to establish its relations with well-defined classes and to put it in its proper place. Of equal importance with the analytical method of study, however, is the synthetical. This method of research, as applied to organic compounds, embodies in it the highest triumphs of modern chemistry. It has been most fruitful of results, both theoretical and practical. Within recent years, hundreds of the products of vegetable and animal life have been built up from simpler compounds. Thousands of valuable dye-colors and other compounds used in the arts attest its practical value. It may, therefore, seem anomalous when I say that one of the most important of all the classes of organic compounds has not shared in this advance. The alkaloids, that most important class from a medical and pharmaceutical point of view, have until quite recently been defined in the books simply as "vegetable bases containing nitrogen." Whether they were marsh-gas or benzol derivatives was not made out; how the four elements, carbon, hydrogen, oxygen and nitrogen, were grouped together in them was absolutely a thing unknown. Chemists all admitted two things—first, that their constitution was very complex, and, second, that the synthesis of any of the more important medicinal alkaloids would be an eminently desirable thing to effect, from every point of view. Within the last five years, however, quite considerable progress has been made in arriving at a clearer understanding of these most important compounds, and I shall offer to your attention this evening a brief statement of what has been done and what seems likely to be accomplished in the near future.

It was early recognized that the alkaloids were complex amines or ammonia derivatives. The more or less strongly marked basic character of these bodies, the presence of nitrogen as an essential element, and, above all, the analogy shown to ammonia in the way these bases united with acids to form salts, not by replacement of the hydrogen of the acid, but by direct addition of acid and base, pointed unmistakably to this constitution. But with this granted, the simplest alkaloid formulas, those of conine, $C_8H_{17}N$, and nicotine $C_{10}H_{14}N_2$, still showed that the amine molecule contained quite complex groups of carbon and hydrogen atoms, and the great majority of the alkaloids—the non-volatile ones—contained groups in which the three elements, carbon, hydrogen, and oxygen, all entered. Hence the difficulty in acquiring a knowledge of the molecule structure of those alkaloids at all comparable with that attained in the case of other organic compounds. Of course synthesis could not be applied until analysis had revealed something of the molecular grouping of these compounds, so the action of different classes of reagents was tried upon the alkaloids. Before summarizing the results of this study of the decomposition and alteration products of the alkaloids, a brief reference to a related class of organic compounds will be of assistance to those unfamiliar with recent researches in this field.

It is well known that in coal-tar is found a series of ammonia-like bases, aniline or amido-benzol, toluidine or amido-toluol, and xylidine or amido-xylol, which are utilized practically in the manufacture of the so-called aniline dye colors. It is perhaps not so well known that there are other series of bases found there too. The first of these is the pyridine series, including *pyridine*, C_5H_5N, *picoline* (methyl-pyridine) $C_5H_4N (CH_3)$, *lutidine* (dimethyl-pyridine) $C_5H_3N (CH_3)_2$, and *collidine* (trimethyl-pyridine) $C_5H_2N (CH_3)_3$. This series is also found in relatively larger proportion in what is known as Dippel's oil, the product of the dry distillation of bones.

The second series is the quinoline series, including *quinoline* C_9H_7N, *lepidine* (methyl-quinoline) $C_{10}H_9N$, and *cryptidine* (dimethyl-quinoline) $C_{11}H_{11}N$. The two compounds which give name to these series, pyridine, C_5H_5N, and quinoline, C_9H_7N, respectively, bear to each other a relation analogous to that existing between benzol, C_6H_6, and naphthalene, $C_{10}H_8$, and the theory generally accepted by those chemists who have been occupying themselves with these bases and their derivatives is that pyridine is simply benzol, in which an atom of nitrogen replaces the triad group CH, and quinoline, the napthalene molecule with a similar change. Indeed, Ladenburg has recently succeeded in obtaining benzol as an alteration product from pyridine in certain reactions. Moreover, from methyl-pyridine, $C_5H_4N (CH_3)$, would be derived an acid known as pyridine-carboxylic acid, $C_5H_4N (COOH)$, just as benzoic acid, C_6H_5COOH, is derived from methyl-benzol, $C_6H_5CH_3$, and from dimethyl-pyridine, $C_5H_3N (CH_3)_2$, an acid known as pyridine-dicarboxylic acid, $C_5H_3N (COOH)_2$, just as phthalic acid, $C_6H_4 (COOH)_2$, is derived from dimethyl-benzol, $C_6H_4 (CH_3)_2$. The same thing applies to quinoline as compared to naphthalene.

We may now look at the question of the decomposing effect of reagents upon the alkaloids. The means which have proved most efficacious in decomposing these bases are the action of oxidizing and reducing agents, of bromine, of organic iodides, of concentrated acids and alkalies, and of heat.

Taking up the volatile alkaloids, we find with regard to *Conine;* first, that the action of methyl iodide shows it to be a secondary amine, that is, it retains only one replacable hydrogen atom of the original ammonia molecule. Its formula is therefore $C_8H_{16}NH$. From conine can be prepared methyl-conine, which also occurs in nature and dimethyl-conine. From this latter has been gotten a hydrocarbon C_8H_{14}, conylene, homologous with acetylene C_2H_2. Conine, on oxidation, yields chiefly butyric acid, but among the products of oxidation has been found the pyridine-carboxylic acid before referred to. The formula of conine, $C_8H_{17}N$, shows it to be homologous with piperidine $C_5H_{11}N$, a derivative of piperine, the alkaloid of pepper, to be spoken of later, and, just as piperidine is derived from pyridine by the action of reducing agents so conine is probably derived from a propyl-pyridine. The artificial alkaloid paraconine isomeric with the natural conine will be referred to later.

Nicotine, $C_{10}H_{14}N_2$, the next simplest in formula of the alkaloids, is a tertiary base, that is, contains no replaceable hydrogen atoms in its molecule. It shows very close relations to pyridine. When nicotine vapor is passed through a red-hot tube, it yields essentially collidine, and with this, some pyridine, picoline, lutidine, and gases such as hydrogen, marsh-gas and ethylene. Heated with bromine water to 120° C, it decomposes into bromoform, carbon dioxide, nitrogen and pyridine. When its alcoholic solution is treated with ferricyanide of potassium it is oxidized to dipyridine $C_{10}H_{10}N_2$. Potassium permanganate, chromic or nitric acid oxidizes it to nicotinic acid, $C_6H_5NO_2$, which is simply pyridine-carboxylic acid, C_5H_4N (COOH), and which distilled over quick-lime, yields pyridine C_5H_5N.

Turning now to the non-volatile and oxygenized bases, we take up first the opium alkaloids. *Morphine*, $C_{17}H_{19}NO_3$, is a tertiary amine, and appears to contain a hydroxyl group like phenols, to which class of bodies it has some analogies, as is shown in its reaction with ferric chloride. Its methyl ester, which can be formed from it, is *Codeine*, one of the accompanying alkaloids of opium. Besides the methyl derivative, however, others are possible, and several have been recently prepared, giving rise to a class of artificial alkaloids known as *codeines*. Morphine, rapidly distilled over zinc dust, yields phenanthren, trimethyl-amine, pyrrol, pyridine, quinoline, and other bases. The action of strong hydrochloric acid upon morphine changes it into apomorphine $C_{17}H_{17}NO_2$ by the withdrawal of a molecule of water. Ferricyanide of potassium and caustic soda solution change morphine into oxydimorphine, $C_{34}H_{36}N_2O_6$. When heated with strong potassium hydrate, it yields methylamine.

Narcotine, another of the opium alkaloids, when heated with manganese dioxide and sulphuric acid, is oxidised and splits apart into opianic acid, $C_{10}H_{10}O_5$, and cotarnine, $C_{12}H_{13}NO_3$. This latter, by careful oxidation, yields appophyllenic acid, $C_8H_7NO_4$, and this, on heating with hydrochloric acid to 240° C, yields pyridine dicarboxylic acid, C_5H_2N $(COOH)_2$. The base cotarnine also results from the prolonged heating of narcotine with water alone. In this case, instead of opianic acid, its reduction product, meconine, $C_{10}H_{10}O_4$, is produced.

Meconic acid, $C_7H_4O_7$, which is found in opium in combination with the different bases, has also been investigated. By acting upon meconic acid with ammonia, comenamic acid is formed, and this latter, when heated with zinc dust, yields pyridine.

If we go now to the cinchona alkaloids, we meet with exceedingly interesting results. *Quinine*, $C_{20}H_{24}N_2O_2$, when carefully oxidised with chronic acid or potassium permanganate, yields a series of products. First is formed quitenine, $C_{19}H_{22}N_2O_4$, a weak base, then quininic acid, $C_{11}H_9NO_3$, then the so-called oxycinchomeronic acid, $C_8H_5NO_6$, and finally cinchomeronic acid, $C_7H_5NO_4$. Now the two acids last mentioned are simple substitution products of pyridine, oxycinchomeronic acid being a pyridine-tri-dicarboxylic acid, C_5H_2N $(COOH)_3$, and cinchomeronic acid a pyridine-dicarboxylic acid, C_5H_3N $(COOH)_2$. When distilled with potassium hydrate, quinine yields quinoline and its homologues. The alkaloid has been shown to be a tertiary base.

Quinidine yields with chromic acid the same decomposition products as quinine.

Cinchonine, $C_{19}H_{22}N_2O$, the second most important alkaloid of these barks, when oxidised with potassium permanganate, yields cinchonic acid, which is a quinoline-carboxylic acid C_9H_6N (COOH), cynchomeronic acid, which has just been stated to be a pyridine-dicarboxylic acid and a pyridine-tri-carboxylic acid. When cinchonine is treated with potassium hydrate, it is decomposed into quinoline and a solid body, which on further treatment yields a liquid base C_7H_9N, which is probably lutidine. It has been found, moreover, that both tetrahydroquinoline and dihydroquinoline, hydrogen addition products of quinoline, are present. When cinchonine is distilled with solid potassium hydrate, it yields pyrrol and bases of both the pyridine and quinoline series.

Cinchonidine, when heated with potassium hydrate, yields quinoline also, and with nitric acid the same products as cinchonine.

Strychnine has been found to be a tertiary amine. When distilled with potassium hydrate, quinoline is formed.

Brucine is a tertiary diamine, that is, formed by substitution in a double ammonia molecule. When distilled with potassium hydrate it yields quinoline, lutidine, and two isomeric collidines.

The alkaloid *Atropine* has been quite thoroughly studied, with results of great interest. When heated with either baryta water or hydrochloric acid, it takes up a molecule of water and is split into tropine, $C_8H_{15}NO$, and tropic acid, $C_9H_{10}O_3$. This latter is phenyl-oxypropionic acid. Tropine, when heated to 180° C, with concentrated hydrochloric acid, splits off a molecule of water, and yields tropidine, $C_8H_{13}N$, a liquid base, with an odor resembling conine. When this tropidine is heated with an excess of bromine, it yields dibrompyridine.

Piperine, the alkaloid of pepper, has also been well studied. When boiled with alcoholic potash solution, it takes up a molecule of water and splits apart into piperic acid, $C_{12}H_{10}O_4$, and piperdine, $C_5H_{11}N$. This latter base has been shown to be a hydrogen addition product of pyridine, C_5H_5N. When heated with concentrated sulphuric acid, it is oxidised to pyridine. Piperidine hydrochlorate, also, when heated with excess of bromine to 180° C, yields dibrompyridine.

Sinapine, the alkaloid which exists as sulphocyanate in white mustard seed, yields under the same reaction as that applied to atropine and piperine, quite different results. When boiled with baryta water, sinapine decomposes into sinapic acid, $C_{11}H_{12}O_5$, and choline, $C_5H_{15}NO_2$, the latter a well-known constituent of the bile, and produced also in the decomposition of the lecithin of the brain and yolk of egg.

Cocaine, the alkaloid of coca leaves, is decomposed by heating with hydrochloric acid into methyl alcohol, benzoic acid and a crystalline base ecgonine, $C_9H_{15}NO_3$.

Caffeine and *theobromine* have also quite different relations. Caffeine, it will be remembered, is the methyl ester of theobromine, and can be prepared from it. When caffeine is carefully oxidised with chlorine, it yields dimethyl-alloxan and methyl-urea. Both theobromine and caffeine are decomposed by heating to 240° C in sealed tubes with hydrochloric acid, identical products being obtained. These products are carbon dioxide, formic acid, ammonia, methylamine, and sarcosine, the last three being of course in combination wtth the excess of hydrochloric acid. The artificial preparation of theobromine and caffeine from xanthine, and guanine also shows clearly their relations.

If, having completed our survey of what has been done in the way of decomposing the alkaloids by the different classes of reagents, we review the field, it will be seen that with all the alkaloids mentioned, except the last four, a more or less immediate connection with the pyridine and quinoline bases has been indicated. The conviction accordingly forces itself upon us that, if we want to attack the problem of building up any of these important alkaloids artificially, we must turn to these bases as our starting point.

As already stated, both series occur in coal-tar and the pyridine series also more abundantly in bone-oil. Pyridine, picoline, lutidine, and collidine, the first four members of the pyridine series, have, moreover, all been formed synthetically, although the processes are not such as would yield the products as cheaply as they can be gotten from Dippel's oil. Quinoline, the first member of the higher series, had been made synthetically by several chemists, but by expensive and involved methods, when Skraup, in 1881, effected its synthesis from nitrobenzol and glycerin, or still better, a mixture of nitrobenzol and aniline with glycerin. This process allows of its being made on a commercial scale if desirable. Shortly after, by an application of the same principle, Döbner and Miller effected the synthesis of lepidine, the second member of the quinoline series.

At the same time that this general agreement to consider these bases as the starting point in the endeavor to effect the synthesis of the natural alkaloids had been arrived at by chemists, it was thought well to look into the question whether these bases and their immediate derivatives had any therapeutic value of their own.

Piperidine, the decomposition product of piperine, which we have shown may be considered to be hexahydropyridine, was examined by Dr. Kronecker, of Berlin, at the request of Prof. Hofmann, and was found to have an action upon animals in many respects resembling that of conine. Prof. Filehne, of Erlangen, who has studied a large number of these pyridine and quinoline derivatives, found, moreover, that the hydrochlorate of ethyl-piperidine had a physiological action quite analagous to that of conine.

The physiological action of quinoline itself has been studied quite extensively by Donath and others, and it was found that several of its salts were quite valuable febrifuges, acting very much like quinine, and capable in cases of being used as a substitute for it. In general, the hydrogen addition products were found to be more active than the simple base, an observation entirely in accord with the theory formed by Wischnegradsky, and by Königs, as the result of the study of the decomposition products of the alkaloids, viz., the alkaloids are in general hydrogen addition products of pyridine and quinoline, or of the two bases combined. Thus, Prof. Filehne found that hydrochlorate of tetrahydroquinoline was much more energetic in its action than quinoline, but could not be used on account of a too powerful local effect. The hydrochlcrate of dimethyl-tetrahydroquinoline, which was distinguished by its strong bitter taste, much resembling that of quinine, had an effect like that of curare poison. The most decided febrifuge action, however, was found by Prof. Filehne to reside in the hydrochlorate of oxyhydro-methyl-quinoline, introduced to public notice by Prof. O. Fischer under the name of "Kairin," and in the acid sulphate of tetrahydromethyl-quinoline, introduced under the name of "Kairolin." These compounds had a very surprising febrifuge action, without any unpleasant after effects or local disturbances.

The most active workers in the field of synthetic formation of the alkaloids have been Wischnegradsky, of St. Petersburg,—who, unfortunately for science, died at an untimely age in 1880,—Königs and Fischer, of Munich, and Ladenburg, of Kiel. The study of the decomposition products of the cinchona alkaloids especially points quite distinctly to the probable existence in quinine of a hydrogen addition product of pyridine, in combination with a methyl-quinoline group. The many experiments that are now being made to test this and other questions that suggest themselves will not long leave us in the dark. Whether a practical commercial synthesis of quinine will follow is another matter, but it is within the bounds of possibility, or perhaps even of probability.

It must not be supposed that no syntheses of alkaloids have been effected as yet. By heating butyl-aldehyde with alcoholic ammonia is formed *paraconine*, an alkaloid isomeric with the natural conine, but differing in physiological action. By the action of sodium upon pyridine is produced a compound $C_{10}H_8N_2$, known as dipyridyl, and this, under the influence of nascent hydrogen, takes up six atoms and becomes *isonicotine*,

$C_{10}H_{14}N_2$, a physiologically active alkaloid, isomeric with the true nicotine. The formation of a series of alkaloids under the name of *codeines*, by the substitution of other organic radicals instead of methyl in the codeine reaction, has already been alluded to. *Atropine* can be formed by uniting tropine and tropic acid, the two decomposition products already noted. The latter of these products is already shown to be capable of synthetical formation, and the other will no doubt be formed in the same way. The artificial atropine is identical with the natural alkaloid. Ladenburg has also formed a series of artificial alkaloids, called *tropeines*, by uniting the base tropine with different organic acids as in the case of the compound of mandelic acid and tropine known as *homatropine*, an alkaloid of action similar to atropine, but possessing some decided advantages in its use. *Piperine* has also been made by the uniting of piperidine and piperic acid, and, as piperidine has already been formed from pyridine, we have here a true synthesis also. Both *theobromine* and *caffeine*, its methyl derivative, have been made from xanthine, which itself can be formed from guanine, a constituent of guano.

We may conclude, from this reference to what has been done in the last few years, that the reproach mentioned in first speaking of the alkaloids as a class, that almost nothing was known of their constitution, will not long remain, and that as their molecular structure is laid bare in these studies now being made, keen-sighted chemists will effect their artificial formation. When these most valuable compounds can be made by exact methods, in a state of entire purity, and at a cost much below that paid for the present extraction of them from relatively rare plants, organic chemistry will have placed all of us under obligations as great as those owing any branch of science, no matter how practical we call it.

After the close of the introductory lecture, brief remarks were made by Professors Maisch, Remington and Trimble, and Mr. Jenks, of the Examining Committee. Professor Maisch took occasion to explain to the assembled classes the rule recently adopted, which debars students from taking the seats assigned to them, when they enter the room after the commencement of a lecture, and compels them to take a seat on the back benches. He stated that this rule would be rigidly enforced, so as to avoid the confusion and disturbances which had often marred some of the lectures of former courses.

Promptly at 9 o'clock the officers of the Zeta Phi Alpha Society invited the Senior Class into the fourth-story, in order to organize the Zeta Phi Society of 1883–84 in proper style. The meeting was large, harmonious and enthusiastic. President Howard B. French appointed D. W. Ross as Treasurer, *pro tem.*, so that the enrollment of the members and payment of initiation fees was begun at once. Over 120 names were speedily subscribed, and the proper dues were at once paid in. Nominations for the various offices were then called for. The President appointed one teller from the class, and two from the older members. The voting was quite unanimous. The following officers being elected by an overwhelming majority:

President, Geo. F. Maddock; Vice-President, Robt. N. Harper; Secretary, Thomas D. Baker; Treasurer, Luther J. Schroeder; Executive Committee, William Ogilby, Austin C. Sherman, Benj. F. Stahl, A. L. Ballenger and Thomas O. Nock.

The election of a Valedictorian was postponed to a future meeting. While the counting of the votes was in progress in an adjoining room, Dr. A. W. Miller called the attention of the assembly to the social meetings of the Alumni Association, to which all the students were cordially invited. The tedium of waiting for "the returns" was relieved by the recital of "Mark Twain's Experience with European Guides," the "First Appearance in Type," and the painful "Yarn of the Nancy Bell."

All the proceedings of the evening were characterized by harmony, decorum and order. The officers elect, to whom the books, funds, etc., were turned over subsequently, seemed to be capable young gentlemen, who, no doubt, did credit and honor to the society over which they were called to preside.

NAMES OF THOSE WHO HAVE HELD PROFESSORSHIPS IN THIS COLLEGE (all deceased).

GERARD TROOST, M. D., Professor of Chemistry from 1821 to 1822.

SAMUEL JACKSON, M. D., Professor of Materia Medica from 1821 to 1827.

BENJAMIN ELLIS, M. D., Professor of Materia Medica from 1827 to 1831.

GEORGE B. WOOD, M. D., Professor of Chemistry from 1822 to 1831, when he was elected to the chair of Materia Medica made vacant by the death of Dr. Ellis, and continued till 1835.

FRANKLIN BACHE, M. D., Professor of Chemistry from 1831 to 1841.

R. EGGLESFIELD GRIFFITH, M. D., Professor of Materia Medica from 1835 to 1836.

WILLIAM R. FISHER, Professor of Chemistry from 1841 to 1842.

JOSEPH CARSON, M. D., Professor of Materia Medica from 1836 to 1850.

WILLIAM PROCTER, JR., Professor of Theory and Practice of Pharmacy from 1846 to 1866, and from 1872 to 1874.

ROBERT P. THOMAS, M. D., Professor of Materia Medica from 1850 to 1864.

EDWARD PARRISH, Professor of Materia Medica from 1864 to 1866, and Professor of Pharmacy from 1866 to 1872.

ROBERT BRIDGES, M. D., Professor of Chemistry from 1842 to 1879, and Emeritus Professor of Chemistry from 1879 to 1882.

VALEDICTORY ADDRESS

BY

PROF. JOSEPH P. REMINGTON, PH. G,

DELIVERED AT THE

Sixty-Third Annual Commencement of the Philadelphia College of Pharmacy

Academy of Music,

Wednesday Evening, March 19th, 1883.

LADIES AND GENTLEMEN :

GRADUATES :—It becomes my duty this evening, through the invitation of the Board of Trustees of the Philadelphia College of Pharmacy, to convey to you the farewell words of your Alma Mater. You have just been admitted into the ranks of American Pharmacists, and are now legally entitled to engage in the profession of your choice ; this hour, which you have enjoyed in anticipation so frequently in the past, is now one of the bright realizations of the present. The words of our worthy and greatly respected President which you have just listened to, and the simple ceremonies which accompanied them, invest you with responsibilities which you cannot shrink from, and you are called upon to-night to shoulder your burdens, and with the cheers of your comrades and the encouraging words of your guides still ringing in your ears, you commence your several journeys through life. The few words that we have yet to say to you to-night will not deal with technical subjects ; your minds have been laboriously engaged in these absorbing topics so lately and so continuously that, even were they appropriate on this occasion, considerations of humanity would compel us to spare you from any further infliction.

In sending you forth from the sheltering arms of your Alma Mater, we should be false to her interests and to yours if we did not, even at this last moment, direct your steps into the path which will lead to *success with honor;* you enter upon the arduous duties of the pharmacist at a time when the customs, traditions, and methods of a vocation as old as that of the practice of medicine itself, seem to be in danger of passing away.

A consuming desire for quickly-gotten gain lies at the root of the pharmacist's financial troubles at present ; a steady, moderate return for the amount of capital invested does not satisfy the hungry maw of a few Algerines, who, having no professional claims or ability to draw upon to serve their fellows, boldly separate the articles of medicinal value which are regarded as ordinary merchandise from those which demand personal skill on the part of the apothecary, and by methods which would do credit to Bowery or Chatham street, have succeeded in attracting attention by advertising proprietary goods, and in many cases selling them below cost, trusting to recompense themselves by obtaining a larger rate of profit on others not so greatly in demand.

The question of the hour is, how to meet this onslaught? Undoubtedly the most effective method would be to meet the enemy on equal terms, until he is forced to capitulate, but the loss in killed and wounded upon the side of the regular forces must necessarily be great, and no matter how thorough the organization and discipline of the rank and file, those who are well able to bear the brunt of the fray shrink from involving their weaker brethren; at present relief is promised from the manufacturers, who see in the future the annihilation of their profits if prompt measures are not taken, the outcome no one can predict, but it may be safely concluded that the inertia of the pharmacist (who is necessarily cautious and conservative), having at last been overcome, the organization and united action which is now being consummated, will bind all together to meet the common enemy, and time will show that the feelings of rivalry and distrust which pharmacists may have perhaps been insensibly and mutually harboring, will upon personal acquaintance flee away as the morning mist before the genial rays of the summer's sun, for

> "It is the secret sympathy,
> The silver link, the silken tie,
> Which heart to heart, and mind to mind
> In body and in soul can bind."

But whilst those who are older than you are engaged in this contest, it becomes a most important matter for you, although now only assuming the attitude of interested spectators, to thoroughly study the situation, so that when the time comes for you to launch your barks, you may quickly steer away from the rocks and dangerous shoals that beset your course.

Your safety lies in your education.

The druggists who to-day are the greatest sufferers pecuniarily, are those who have entered the business without thorough training, and who are compelled to depend upon the technical knowledge of others for their sustenance.

He, who through indolence or ignorance, permits his individuality to be lost, and fails to establish in the community in which Providence has placed him, a personal reputation as a man whose skill and knowledge are necessary to the comfort and safety of the lives of his fellows; if a dry-goods clerk or a grocer's assistant can replace him, and serve the public as well as he can; if his knowledge of his profession extends no further than to be able to tell one medicine from another, and to accomplish the successful feat of pouring the *products of another's skill* from one bottle to another, then he richly deserves the fate which is sure to overtake him. It becomes with him purely a question of business ability, if he can command enough capital to buy the wares of others in large enough quantities to compete with the immense dry goods stores, and if he can afford to spend enough in printer's ink to keep his claims always before the public, his business risks are no greater than those of the ordinary merchant.

But pharmacy is a profession.

As I look into your faces to-night, I see representatives from nearly every State in the Union—from Maine and Texas, Dakota and Georgia, Wisconsin and South Carolina, New York and Kansas, Pennsylvania and Missouri, Nebraska and New Jersey, and although one hundred and fifty numerically, you form but a tithe of the large numbers of educated pharmacists who have been sent forth from the halls of the Philadelphia College of Pharmacy. Can it be that the seven thousand six hundred and nine students who have matriculated in the College since it was incorporated, in 1822, have toiled and struggled for the degree of Graduate in Pharmacy in vain? Is this enormous accumulation of technical knowledge, representing continuous study and literary effort which extends over a period of more than half a century, to go for naught? Have the people of this matchless republic, who have made, in the last century, such wonderful strides in civilization, at last lost all appreciation of the value of pharmaceutical knowledge? No! no! we do not believe it!

Some of you, this evening, have been favored above your colleagues. You have, by diligent study and earnest effort, succeeded in distinguishing yourselves by earning prizes; the anxious hours of toil and the wearying delays of hope deferred, are all forgotten in this moment of victory, you would not wish to be reminded now of the discouragement which overwhelmed you as you wrestled with the intricacies of vegetable histology, schlerenchyma, scalariform ducts, fibro-vascular bundles, stomata, spongioles, etc., etc. Or when the more complicated formulæ which abound in the modern chemistry of the organic substances are under consideration, and compound radicles, negative elements, dyads and tetrads, hydroxyl and its bewildering combinations seem to be in danger of hopeless dissociation, or when pharmaceutical mathematics of a peculiar kind appeared to supply the last feather, only to be succeeded by the ordeal of a thorough practical examination to test your fitness to serve behind the dispensing counter, by proving your skill with the mortar and pestle, the pill-tile and the spatula—now, are you to be told that all this training is useless, that there is no market for it, that the great masses of the body politic, no matter how serious the illness, are satisfied with the kind of ready-made physic that they get at the dry-goods store, which, according to the proprietor's almanac, is just as valuable for removing corns as for curing consumption? No, it is not quite so bad as this, but, gentlemen, the antiquated methods of the apothecary must give way. The public rightly reasons that the proper place to buy medicines is at the medicine store, and so long as the pharmacist meets the market and will supply the articles of commerce at commercial rates, just so long can he depend upon his share of patronage. What matters it to the patient if the porous plasters or pop bitters is bought at the news stand or the drug store, provided it is genuine? You can no more think of controlling or influencing in your puny strength, the great underlying principles of political economy, governing trade and commerce, than you can dream of checking the resistless surging of the sea.

But you can make and market your own preparations, and thus place an honest, scientific, skillfully prepared compound in direct competition with that of the unscrupulous quack, and in this you may surely rely upon the substantial aid of every cultivated, liberal-minded physician. By adopting this course you can make available the education that you have acquired. The enormous fortunes made by the few who have reaped the profits from popular medicines have been largely made at the expense of the corner apothecary; he has been content to act merely as the distributor, or manufacturer's agent, and only when the commission, which he thankfully received in the past, is in danger of being annihilated, does he wake up to a sense of lost opportunity. By all of the natural laws of trade, by all that is just and honorable and right and of good report, the honest, capable apothecary is justly entitled to all of the patronage of his neighborhood. Upon each one of you, then, will rest a responsibility; you cannot assume a negative position with safety: your enemy is active, unscrupulous, capable, and full of expedients. Your education and practical knowledge will have weight and influence and will win you ultimate success, just in proportion as you industriously make use of it. There is no ground for discouragement in the present crisis, and the close drawing of the lines and the consolidation of the ranks will give you clearer vision and greater strength.

For the pecuniary return from the products of your own skill you are placed in an almost independent position, you must obtain for them a fair, moderate advance on their cost and be guided by sound principles of commercial intercourse. *He who is guilty of making an extortionate charge is sure to drive even his best friend from his doors.* In estimating the value of the products of your own skill, the actual cost of the materials is no criterion of their worth. The tailor who fashions a garment expects a greater return than the mere value of the cloth, the lawyer in demanding his fee never thinks of the cost of the paper upon which the successful brief was written, the dentist takes care to extract from his patient more than the cost of the gold foil used in filling a tooth, the photographer is compelled to draw a greater amount of silver from the pockets of his sitter than he has used on the negative, and a Meissonier can get a hundred thousand dollars for umber, lake, carmine, raw sienna, lake-white and canvas. The intelligent public never questions the right of the tailor, lawyer, dentist, photographer, or artist to obtain for his services just what they are worth, and estimate their value by the amount of time, labor and skill necessary to produce the finished work. The pharmacist must assume a dual role, he is a professional man and a merchant; as a merchant he must sell the commercial products of others at merchantable rates, as a professional man he must obtain his just dues, and these must be regulated by the amount of skilled labor spent upon his products.

And now, gentlemen, I have another subject, of a personal character, that I should like to notice before drawing these remarks to a close. Your class have had the honor of having as one of its members a young lady who has shared alike in your trials, hopes and successes. A few years ago, the expediency of the co-education of the sexes in technical, medical, literary or scientific subjects was generally in doubt. A great change in public opinion is now transpiring; Harvard, our own University, the University of London, and, lastly, old Oxford, have yielded to pressure. There are still some of the great universities and colleges that decline to open their doors to women, others again have left them ajar, but it gives me pleasure to say that the Philadelphia College of Pharmacy, the oldest college of its kind in the country, has never refused admission to a student on account of sex—that the present graduating class have uniformly treated their lady classmate with consideration and respect, whether in the lecture-room, laboratory, quiz-room or hall, but feebly expresses the truth. In the examinations, in which you were all treated alike, she was accorded a fair field, without favor; the honors which she achieved, you have freely acknowledged, were heartily deserved, and whilst some may observe that this much was expected, and less than this would be disgraceful, it is but a simple act of justice to place the honorable fact to the credit of the Class of 1884, for you certainly have not tarnished the record for gallantry of the American gentleman. And now the final word must be spoken. To-night will witness the severance of the close tie which has bound you together as classmates, to-morrow you will be speeding homeward to all points of the compass, and your life work will then commence in earnest—

> "To this, thy purpose—to begin, pursue
> With thoughts all fixed, and feelings purely kind;
> Strength to complete, and with delight review,
> And grace to give the praise where all is ever due."

FAREWELL.

COMMENCEMENT EXERCISES.

1884.

The Sixty-third Annual Commencement of the Philadelphia College of Pharmacy was held at the Academy of Music, on Wednesday evening, March 19th, 1884, in the presence of an audience of at least 4,000 persons.

Promptly at 8 o'clock the Graduating Class marched on the stage and occupied the seats assigned them; they were followed by the Officers, Faculty, Members and Alumni of the College, filling every portion of the stage.

In the absence of Prof. Maisch, Prof. Sadtler called the roll of Graduates, who presented themselves around the President, Mr. Dillwyn Parrish, who conferred the degree of Graduate in Pharmacy (Ph. G.) upon them.

The several prizes were then awarded as follows:—

Procter Prize, a Gold Medal, was presented to John C. Falk, of Missouri, by Mr. Jas. T. Shinn, on behalf of the Board of Trustees of the College.

H. C. Lea Prize of $100, for best thesis, to F. X. Moerk, of Delaware, was presented by Mr. Wm. J. Jenks, Secretary of the College, with honorable mention of Miss Grace Lee Babb, Harry Lee Barber, Jos. Crawford, F. A. Dalpe, Milton S. Falck, John M. Hillan, Albert H. Kinsey, Thos. O. Nock, Edward S. Petrie, Edmund Preston, Jr., Alex. F. Streitz, Frank G. Ryan, Melmoth W. Osborne, Geo. A. Weirich and Luther J. Schroeder.

Materia Medica Prize, a Zentmayer Histological Microscope, was presented to Harry Lee Barber, of Philadelphia, by Vice-President Chas. Bullock, Prof. J. M. Maisch being absent on account of sickness; Milton S. Falck received honorable mention for the histological and chemical examination of an American drug.

Jos. P. Remington Prize, a Gold Medal and Certificate, for best collection of pharmaceutical preparations made without any special apparatus, was presented to Thos. O. Nock, of Delaware, by Prof. Remington, with honorable mention of Parry W. Vaughan, of North Carolina.

Chemistry Prize, a Troemner Analytical Balance, for analytical work, was presented to F. X. Moerk, of Delaware, with honorable mention of Harlan P. Pettigrew and Oscar Houck.

Mr. Thos. S. Wiegand, on behalf of the Board of Trustees, presented Harry C. Cook, of Ohio, the Prof. John M. Maisch Prize, $20 in gold, offered by Mr. J. H. Redsecker, of Lebanon, Pa., for the best microscopical examination of drugs.

Wm. Henri King, on behalf of the Graduating Class, presented Prof. Maisch a handsome Group of Rogers' Statuary. Vice-President Robt. H. Shoemaker received it for Prof. Maisch, in his absence.

The Valedictory Address was delivered by Prof. Jos. P. Remington. (See page 118).

The Music was furnished by the Germania Orchestra.

The floral display was probably not so large as usual, but the number of gifts in packages, books, etc., was greater than ever; these will last, while the flowers, however beautiful, soon fade.

Six members of the Alumni Association assisted the efficient Secretary of the Board of Trustees, Mr. Wm. C. Bakes, in the distribution of the gifts and floral tributes.

THE FACULTY'S COMPLIMENTARY SUPPER

To the Graduating Class was given on Tuesday evening, March 18th, in the Museum of the College. The five or six long tables were well filled with the good things which were provided for the occasion, and the Members of the Graduating Class exemplified in a practical manner that they were good "manipulators" in this part of the week's festivities. After the inner man had been amply supplied, every one settled down to enjoy the speeches which are usually made upon such occasions.

A number of toasts were given and responded to. Prof. Remington presided and proposed the toasts.

The first was responded to by T. Morris Perot, President of the Board of Trustees.

The second, by Jas. T. Shinn.

The third, "Our Alma Mater," was responded to by Chas. Bullock.

The fourth, "Our Senior Profesor;" in the unavoidable absence of Prof. Maisch, Mr. Wm. B. Webb responded in a very pleasant and happy manner.

"Our Junior Professor" was responded to by Prof. Sadtler.

"The Examining Committee" was responded to by our genial Secretary of the College, Wm. J. Jenks.

"The Alumni Association," by A. W. Miller, in a fitting manner.

The "Zeta Phi Society;" Mr. Wm. C. Bakes, the originator of this Society, responded in an able manner.

Speeches were also made by Messrs. Trimble, Zeller and Remington.

Geo. F. Maddock, President of the Zeta Phi Society, presented to the College a most excellent life-size crayon portrait of Prof. Sadtler, which was received on behalf of the College by Prof. Remington, with appropriate remarks.

A pleasing feature of the evening was the presentation of Twenty Dollars to four of the Graduating Class reaching the highest average; it was the gift of Mr. E. L. Boggs, of Charlestown, W. Va. Although not a graduate of any Pharmaceutical College, yet he desired to show his appreciation and sympathy with Pharmaceutical Education. The recipients of this gift were Messrs. Harry C. Cook, Harlan P. Pettigrew, Frank G. Ryan and Henry C. Plenge. Mr. Clement B. Lowe moved that a vote of thanks be tendered to Mr. Boggs for this gift, which was unanimously carried.

Various members of the Class were now called upon for remarks by their fellow classmates, and among those who responded were Messrs. Ryan, Falk, W. A. Cook, Cliffe, Plenge, Streitz, Booze, W. A. Fetters, H. C. Cook, Gano, and others.

Miss Grace Lee Babb, being loudly called for, gracefully responded and made a neat little speech, thanking the Class for their uniform gentlemanly and courteous treatment of her during her three years sojourn among them, and expressing the hope that any ladies who might follow her as students would have as agreeable a class of gentlemen to associate with.

This closed the programme of speech-making.

The Class of 1883-4 was not only a jolly class, but also a musical class, which was shown by the rendering of a song, entitled "Sweet Violets." And, after "Auld Lang Syne" had been well sung, the participants of this most enjoyable occasion separated, well pleased with the evening's entertainment.

MINUTES OF THE FIFTH ANNUAL MEETING

OF THE

ZETA PHI ALPHA CHAPTER, P. C. P.

The Fifth Annual Meeting was held Tuesday, March 18th, 1884, at 2 P.M., in Chapter Room, 145 N. 10th street, about thirty-five members being present, President Howard B. French in the chair. The reading of the minutes of the last annual meeting were dispensed with, those of the Executive Council were read and adopted. Fellow Hancock submitted the report of the Committee on Ritual, a number of suggestions were made by the Chapter and the draft referred back to them for further consideration. It having been stated that the password and grip had been revealed, President French stated that an investigation made at the time had proved that it was but an idle boast of the alleged recipient. The order of business having been, by motion, suspended, the Chapter proceeded to the election of candidates for fellowship. The applications of William Reisert, '84; W. H. Gano, '84; J. E. Chandler, '84; Wm. N. Stem, '73; Abr. T. Clayton, '84; Eugene G. Eberle, '84; F. G. Ryan, '84; Calvin J. Houck, '84; C. B. Lowe, '84; A. S. Wickham, '84: Wm. L. Cliffe, '84; J. W. Worthington, '71; Louis Murjahn, '84; John W. Keller, '84; Robt. F. Finck, '84, and T. D. Baker, '84, were presented, properly recommended, and were referred to committees consisting of Fellows Potts, Brown, Trimble, Newbold, Warrington, Weidemann, Gatchel and Lemberger. Their several reports being favorable to the applicants, the Chapter proceeded to a ballot, the result of which was the unanimous election of the candidates. The President having appointed the masters of ceremonies, and Fellows Lemberger and Newbold as conductors, he requested Vice-President Brown to occupy the chair during initiation, Messrs. Stem, Lowe, Gano, Worthington and Chandler, were the first to undergo the ordeal, to which they submitted with fortitude and resignation, and in due course were pronounced fully fledged Fellows of the Chapter.

Messrs. Fry (elected Feb. 21, 1884), Clayton, Eberle, Reisert and Houck, were then, with efficient help from the newly-elected Fellows, initiated into the Arcana of the Zeta Phi Alpha, and participated with peculiar zest in the ceremonies incident to the admission of would-be Fellows Keller, Murjahn, Cliffe, Finck, Wickham and Baker. These several ceremonies were conducted with unusual pomp and vigor, and the candidates were admonished in reference to the obligation undertaken and the necessity for inviolable secrecy. The order of businesss being resumed, the Committee on Remuneration of Banquet Committee for their personal outlay reported progress and were continued.

The President's Annual Report was then read.

On motion it was adopted and ordered to be spread upon the minutes.

The report of the Secretary was then read and accepted.

The Treasurer's report followed and was referred to an Auditing Committee consisting of Fellows Potts and Gatchel and finally accepted. New business being in order, the President, at the request of the Secretary, read the following:

MR. PRESIDENT, AND FELLOWS OF THE ZETA PHI ALPHA:

It is with much regret that I hereby tender my resignation as Secretary to your Chapter, but find it absolutely necessary so to do. I shall interest myself in your proceedings, and will do what is in my power to advance your aims and interests. With thanks to my fellow-officers and members of the Executive Council for their cordial assistance and genial company at our various meetings, I am Yours fraternally,

WALLACE PROCTER.

On motion of Fellow D. W. Ross, the resignation was accepted.

Fellow Potts moved a vote of thanks to the retiring Secretary for his donation, etc. Carried.

A bill of Ward & Barnitz for printing, $1.75, was ordered to be paid.

Election of officers being next in order, the Chapter went into nominations for Secretary—unexpired term—and members of Executive Council, to fill vacancies. The terms of Fellows C. W. Warrington, C. J. Biddle and E. C. Jones expired by limitation, of Fellow Parker by death, and F. B. Power by removal. Fellow H. A. Newbold was nominated for Secretary, and Fellows Biddle, Warrington, Jones, Stem, England, Weidemann, Martin, Lowe, C. D. S. Früh and Procter for Executive Council. On motion of Fellow Lowe, it was decided that the three receiving the highest number of votes should serve three years, the fourth highest two years, and the fifth one year. Tellers being appointed and a ballot taken, Fellow Newbold was declared elected Secretary, and Fellows Procter with 26, Jones 23, Warrington 21, Weidemann 18, and Lowe 16 votes, were reported elected to Executive Council, as per preceding motion.

The President called attention to the death of Fellow James A. Parker, and Fellow W. E. Krewson moved that a page be left blank in the minute-book for an appropriate remembrance of our departed Fellow. Carried.

The Chapter, on motion, then adjourned.

WALLACE PROCTER,
Secretary.

The following is the list of officers of the Zeta Phi Alpha for 1884–1885:

President—Howard B. French, '71, 410 Callowhill Street.
First Vice-President—Albert P. Brown, '62, Camden, N. J.
Second Vice-President—Wm. E. Krewson, '69, 1801 N. Eighth Street.
Treasurer—Chas. W. Hancock, '57, 3425 Spring Garden Street.
Secretary—H. A. Newbold, 4060 Chestnut Street.
Chaplain—Rev. James C. Craven.

Executive Council—

Jos. L. Lemberger, '64, Lebanon, Pa. C. B. Lowe, '84, Philadelphia, Pa. Thos. H. Potts, '71, Philadelphia, Pa.	1 year.
D. W. Ross, '77, Philadelphia, Pa. Thos. L. Buckman, '74, Chestnut Hill, Pa. C. A. Weidemann, '67.	2 years.
Wallace Procter, '72. E. C. Jones, '64. C. W. Warrington, '76.	3 years.

Applications for Fellowship can be obtained from the Secretary, or any member of the Council. Initiation fee, $2,00.

In Memoriam.

List of Deceased Active Members of the Alumni Association, as far as known.

Patrick, Geo. W., M. D., Class 1846, died at Terra Haute, Ind., in 1874.
Stratton, James, " 1851, " " Bordentown, N. J., March 23d, 1883.
Selfridge, Mathew M., " 1852, " " Philada., Pa., May 23d, 1881.
Watson, Wm. J., " 1853, " " Brooklyn, N. Y., in 1872.
Barr, Thomas H., " 1854,
Leamy, James C., " 1855,
Bringhurst, Ferris, " 1857, " " Wilmington, Del., March 16th, 1871.
Heydenreich, Victor F., " 1858, " " Brooklyn, May 4th, 1879.
Seegar, Roland, " 1859,
Rhodes, Elam, M. D., " 1861,
Fisher, Theophilus, M. D., " 1862,
Mullen, Wesley W., " 1862, " " Philada., Pa., Nov. 27th, 1880.
Leslie, Henry W., " 1862, " " Parker's City, Feb. 14th, 1883, of Softening of Brain.
Rohrer, Earl Penn, " 1863,
Jones, Samuel T., " 1864, " " Philada., Pa., March 14th, 1880, of Bright's Disease of Kidneys.
Gold, Hiram, M. D., Class 1864, " " Philada., Pa., July 12th, 1882.
Keen, Francis, " 1865,
Rubencam, Chas. E., " 1865,
Wendel, Frederick W., " 1865, " " Philada., Pa., May 5th, 1871, Typhoid Fever.
Barnitz, Frank M., " 1866,
Shoemaker, Chas., " 1866, " " Wilmington, Del., Feb. 1st, 1872, Drowned in Christiana Creek while skating.
Corbridge, John E., Jr. Class 1868,
Eayre, Mortimer H., " 1868, " " Duluth, Minn.
Hoagland, Pratt R., " 1868, " " Boston, Mass., in 1883.
Shropshire, Jas. B., " 1868,
Simes, Samuel F., " 1868, " " Philada., Pa., Jan. 10th, 1881.
Shugard, Benj. F., " 1868, " " Georgetown, Col., May 28th, 1882.
Bowman, Henry K., " 1869, " " Philada., Pa., Dec. , 1873.
Davis, Aaron R., " 1869,
Fritchey, James G., " 1869, " " Mechanicsburgh, Pa., Nov. 4th, 1871, of Consumption.
Kolp, Christopher H., " 1869, " " Philada., Pa., Feb. 11th, 1879, of Rheumatism.
Hannaman, John B., " 1870,
Stretch, Charles F., " 1870,
Bolton, Charles F., " 1871, " " Philada., Pa., July 20th, 1879, of Typhoid Fever.
Alvarez Miguel, Y. Ortis, " 1873,
Parker, Jas. A., " 1873, " " Colorado Springs, March 4th, 1884, of Consumption.

Ritter, Eugene D., Class 1873, died at Philada., Pa., March 1st, 1884, of Typhoid Pneumonia.
Schnabel, Charles, Class 1873,
Jacobs, George Harris, “ 1874,
Brown, Frank Pierce, “ 1875,
Maston, Jas. A., “ 1875, “ “ Philada., Pa., Sept. 16th, 1882, of Consumption.
Stockton, Wm. Wood, “ 1876, “ “ Huron, Dakota, April 27th, 1884.
Koehler, Walter W., “ 1877, “ “ Philada., Pa., Feb. 21st, 1880.
Hendricks, Elwood G., “ 1878, “ “ Worcester, Mont. Co., Pa., Aug. 30th, 1880, of Consumption.
Peat, Edward, M. D., Class 1878, “ “ Delphos, Ohio, April 19th, 1883, Acute Consumption.
Elkins, Chas. Wm., “ 1880, “ “ Philada., Pa., Nov. 1st, 1882, of Consumption.
Wolf, Simon E., “ 1882, “ “ Harrisburg, Pa., May 28th, 1882, of Typhoid Pneumonia.
Neuhart, Lawrence Aug., Class 1883, “ “ Columbus, Ohio, June 7th, 1883.

In order to have the above record complete it is desired that those who have any information in regard to dates or cause of deaths of any of the above will communicate the same to the Secretary.

Deaths 1883-1884.

The following deaths of graduates of the Philadelphia College of Pharmacy have been reported since our last report was issued:—

Edward Peat, Class 1878, died at Delphos, Ohio, April 19th, 1883, aged 28 years, of acute consumption.

Henry W. Leslie, Class of 1862, died at Parker's Landing, Feb. 14th, 1883, of softening of the brain, aged 50 years.

Lawrence Augustus Neuhart, Class 1883, died at Columbus, Ohio, June 7th, 1883, aged 21 years and 6 months.

James Stratton, Class 1851, died at Bordentown, N. J., March 23d, 1883.

Robert Faulkner Fairthorne, of the Class 1855, died in Philadelphia, Pa., Monday, Oct. 22d, 1883, aged 48 years, of bilious dysentery.

Edward H. Luckenbach, Class of 1870, died at Bethlehem, Pa.

Samuel Walter Courtney, Class of 1881, died in Philadelphia, of consumption, October 24th, 1883, aged 24 years.

Thos. S. Collins, M. D., Class 1880, died at Blackwoodstown, N. J., Dec. 12th, 1883, of consumption, aged 27 years.

Alonza G. Mackenson, Class of 1878, died in Philadelphia, Jan. 8th, 1884, of meningitis, aged 28 years.

James A. Parker, Class of 1873, died at Colorado Springs, March 4th, 1884, of consumption.

Eugene D. Ritter, Class of 1873, died at Philadelphia, Pa., March 1st, 1884, of typhoid pneumonia.

John Beatty Price, Class 1874, died in Wilmington, Del., of consumption, in March, 1884.

Wm. Wood Stockton, Class of 1876, died at Huron, Dakota, April 27th, 1884.

Paul Frederick Lehlbach, Class 1863, died in New York City, on Monday afternoon, April 28th, 1884, of heart disease, aged 42 years.

List of Students who took the Quizzes under the auspices of the Alumni Association, Session of 1883-84.

SENIORS.

Alexander, Fredk. Wm., Rochester, N. Y.
Allen, Chas. Spencer, Easton, Pa.
Anderson, Henry Warren, Bath, Me.

Cassell, Wm. Ellsworth, Harrisburg, Pa.
Chandler, Isaac Eugene, Kennett Square, Pa.
Clayton, Abraham Theophilus, Philada., Pa.
Cook, Harry C., Columbus, Ohio.
Cook, Wm. Alexander, Americus, Ga.
Crawford, Joseph, Philadelphia, Pa.

D'Huy, Bernard H., Abilene, Kan.

Heiberger, Eugene Saml., Allentown, Pa.
Hinckley, Levi Ellsworth, Chagrin Falls, O.
Houck, Oscar, La Crosse, Wis.

Judd, James Frederick, London, England.

Keller, John Wm , Altoona, Pa.
Klump, Geo. Lewis, Allentown, Pa.
Kussenberg, Louis Carl, Reading, Pa.

McCoy, Franklin, Belleville, Ohio.
Malatesta, Jos. M., Philadelphia, Pa.
Moore, Christian, Ardmore, Pa.
Murtagh, John Anthony, Germantown, Pa.

Nock, Thomas Oliver, Camden, Del.

Oberholtzer, Chas. Herman, Phœnixville, Pa

Pattengill, Evan I., Elmira, N. Y.
Petrie, Edward Sing, Oswego, N. Y.
Plenge, Henry Chas., Charleston, S. C.
Pierce, Wm. Chandler, Wilmington, Del.

Ridington, Wm. Augustus, Conshohocken, Pa.
Rumsey, Walter Arabin, Salem, N. J.
Ryan, Frank Gibbs, Elmira, N. Y.

Schroeder, Luther Johnson, Columbia, Pa.
Sher, Frederick P., Philadelphia, Pa.
Spangler, Geo. Ellsworth, Lebanon, Pa.
Stager, Edwin Wesley, Lebanon, Pa.
Stahl, Benj. Franklin, Marietta, Pa.
Streitz, Alex. Fred'k, North Platte, Neb.
Sypherd, Clarence Draper, Sadlersville, Md.

Tatem, Henry Randolph, Collingswood, N. J.
Tedford, Edward Weeks, Maryville, Tenn.
Trefry, Thomas Crowell, Yarmouth, N. S.

Vaughan, Parry Wyche, Durham, N. C.

Watson, Wm. Porter, Clearfield, Pa.
Weaber, John Alvin, Fredericksburg, Pa.
Wickham, Anthony Smith, Wheeling, W. Va.

JUNIORS.

Amsden, Geo. Sidney, Manchester, Iowa.
Bissell, Wayne Barker, Waterville, N. Y.
Bogart, Charles Mount, South Amboy, N. J.
Cafky, Wm. Walter, Jacksonville, Ill.
Deakyne, Oscar Boone, Wilmington, Del.
Denniston, Wm. Milliken, Hollidaysburg, Pa.
Dunbar, Thos., Philadelphia, Pa.
Ebeling, Geo. Henry, Wheeling, W. Va.
Elwell, Welcome McC., Rural Dale, Pa.
Engler, John Geo., Hartford, Conn.
Fahey, Edward H., Wilmington, Del.
Fye, Adam Calvin, Tyrone, Pa.
Hess, Edwin Hutter, Harrisburg, Pa.
Howells, James Owen, Bridgeport, Ohio.
Hunter, James Stanton. Pittsburgh, Pa.
Kirk, Grant Elmer, Philadelphia, Pa.
Kirkham, Walter A., Newark, N. Y.
Mumaw, Wm. Eugene, Hazleton, Pa.
Neilor, John, Chester, Pa.
Newton, John W., Gallipolis, Ohio.
North, John Thos., Wilmington, Del.
Peters, Leopold, Fulton, Ill.
Roe, Edwin John, Harrisburg, Pa.
Schlegel, Carl Edward, Davenport, Iowa.
Stewart, Harry Clifton, Wheeling, West Va.

LIST OF CLASSES WHO TOOK INSTRUCTION IN MICROSCOPY

SPRING COURSE, 1883.

Beetem, Jacob S., Ph. G., Philadelphia, Pa.
Cliffe, Wm. Lincoln, Philadelphia, Pa.
Davies, John Jenkins, Scranton, Pa.
McCausland, Jas. Ralston, Philadelphia, Pa.
Pettigrew, Harlan Page, Sioux Falls, Dakota.
Thorn, Henry P., Ph.G., Medford, N. J.

WINTER COURSE, 1883-'84.

Anderson, Harry W., Bath, Me.
Dohmen, Wm. Fredk., Milwaukee, Wis.
England, Jos. W., Ph. G., Philadelphia, Pa.
Gardner, Chas., Columbus Junction, Iowa.
Harrington, Silas Marion, Plano, Texas.
Howells, James Owen, Bridgeport, Ohio.
Leathers, D. A., Jefferson Med. College.
McFarland, Thaddeus Day, Hudson, O.
Malatesta, Jos. Mark, Philadelphia, Pa.
Maisch, Henry Chas. Christian, Phila., Pa.
Ryan, Frank Gibbs, Elmira, N. Y.
Stiles, Henry Lippincott, Moorestown, N. J.
Tidd, Harry, Chambersburg, N. J.
Thompson, Edward Waite, Nashville, Tenn.
Wetteroth, Henry, Bordentown, N. J.
Wirth, Adolph Leopold, Milwaukee, Wis.

GRADUATING CLASS,

Sixty-Third Session,

PHILADELPHIA COLLEGE OF PHARMACY,

1883—1884.

NAME.	PLACE.	SUBJECT OF THESIS.
Alexander, Frederick William	Rochester, N. Y.	*Linimentum Ammoniæ.*
Allen, Chas. Spencer	Easton, Pa.	*Pharmacy Laws and Ethics.*
Anderson, Harry Warren	Bath, Me.	*Medicine Chest.*
Babb, Grace Lee	Eastport, Me.	*Microscopy of Malt.*
Baker, Thomas David	Lewisburg, Pa.	*Piscidia Erythrina.*
Barber, Harry Lee	Philadelphia, Pa.	*Menispermum Canadense.*
Ballinger, Abraham Lincoln	Medford, N. J.	*Impurities in Myrrh.*
Betts, William Hart	Pineville, Pa.	*Caffea.*
Beans, Edwin K., Jr.	Philadelphia, Pa.	*Tobacco.*
Bollinger, Charles Wesley	Apollo, Pa.	*Preparation of Medicines.*
Bollman, Curtis Jacob	Mansfield, O.	*Clerk and Student.*
Booze, Edgar Ellsworth	Trenton, N. J.	*Lead and Lead Salts.*
Boynton, William Carlton	Auburn, Me.	*Spigelia.*
Bray, Walter S.	Dexter, Me.	*Tests for Albumen.*
Bridgeman, Frank Frederick	Sheboygan, Wis	*Sodii Bromidum.*
Briggs, Matt. Ashley	Valdosta, Ga.	*Eriodictyon Californicum.*
Carter, Buchanan	Toisnot, N. C.	*Sodii Chloridum.*
Cassell, William E.	Harrisburg, Pa.	*Convalaria Majalis.*
Chandler, Isaac Eugene	Kennett Square, Pa.	*Opium.*
Clayton, Abraham Theophilus	Philadelphia, Pa.	*Castanea.*
Cliffe, Wm. Lincoln	Philadelphia, Pa.	*Iris Versicolor.*
Colegrove, La Rue Robert	Elmira, N. Y.	*Adulterations.*
Coleman, John Joseph	Wheeling, W. Va.	*Cephalis Ipecacuanha.*
Collins, L. D. Paul	Newark, O.	*Rhus.*
Cook, Harry C.	Columbus, O.	*Erythroxylon.*
Cook, William Alexander	Americus, Ga.	*Potassium Chlorate and Syrupus Ferri Iodidi.*
Crawford, Joseph	Philadelphia, Pa.	*Martynia Proboscidea.*
Crawford, Samuel Douglass	Nazareth, Pa.	*Ergota.*
Cress, Charles Thomas William	South Bethlehem, Pa.	*Disinfectants.*
Custer, John Whiteside	Philadelphia, Pa.	*Pills.*
Dalpe, Frederick Augustus	Reading, Pa.	*Baycura.*
Darrach, Francis Leaming	Philadelphia, Pa.	*Phytolacca Bacca.*
Davies, John Jenkins	Scranton, Pa.	*Boric Acid.*
D'Huy, Bernard H.	Abilene, Kansas	*Aqua Marina.*
Dutton, William	Haddonfield, N. J.	*Pharmacy.*
Eberle, Eugene Gustav	Watertown, Wis.	*Cascara Sagrada.*
Edwards, Charles Matthew	Millington, Md.	*Sanguinaria.*
Evans, Edmund Hann	Philadelphia, Pa.	*Crystallization.*
Falck, Milton Smoker	Lancaster, Pa	*Cimicifuga.*
Falk, John Charles	St. Genevieve, Mo	*Assay of Citrate of Iron and Quinine.*
Feldkamp, Charles Louis	Chicago, Ill.	*Pharmacopœia Extracts.*
Fetters, Wm. Anderson	Philadelphia, Pa.	*Potassium.*
Fetters, Frank Penicks	Philadelphia, Pa.	*Opium.*
Fillman, Eugene Anderman	Norristown, Pa.	*Stramonium.*
Finck, Robert Fechtig	Philadelphia, Pa.	*To know all this is wholesome.*
Fitzgeorge, George Thomas	Trenton, N. J.	*Glycerin.*
Fitzpatrick, Philip Thomas	Lancaster, Pa.	*Cambogia.*
Follmer, Daniel	Milton, Pa.	*Honey.*
Fox, Frederick Henry	Phœnix, N. Y.	*Syracuse Salt Water.*
Gano, Wm. Hubbell, Jr.	Wilmington, Del.	*Scaled Salts of Iron.*
Gardner, Charles	Columbus Junction, Ia.	*Zea Mays.*

NAME.	PLACE.	SUBJECT OF THESIS.
Goldbach, John	Toledo, Ohio	*Decoctions and Infusions.*
Groff, Frank Barr	Philadelphia, Pa	*Pills of Permanganate of Potash.*
Hall, Humes	Philadelphia, Pa	*Pepsin.*
Harper, Robert Newton	Leesburg, Va	*Extractive Matters of Drugs.*
Headley, Wm. Henry Harrison	Bristol, Pa	*Salicylic Acid.*
Heiberger, Eugene Samuel	Allentown, Pa	*Creosote.*
Hesson, Robert Lewis	Philadelphia, Pa	*Caffeina.*
Hillan, John Michael	St. Clair, Pa	*Maydis Stigmata.*
Hinckley, Levi Ellsworth	Chagrin Falls, O	*Our Pharmacists.*
Hirst, Levi Brook	Camden, N. J	*Coating of Pills.*
Hoffman, Ephraim Zeigler	Maytown, Pa	*Convallaria Majalis.*
Houck, Calvin Jerome	Lebanon, Pa	*Sanicula Marilandica.*
Houck, Oscar	La Crosse, Wis	*Sorghum Sugar.*
Huff, John Thompson	Paulsboro, N. J	*Oleum Morrhuæ.*
Ischler, George Herman	Philadelphia, Pa	*Cosmoline.*
Johnston, Thomas Crawford	Philadelphia, Pa	*Crystallization.*
Judd, James Frederick	London, Eng	*Rhamnus Purshiana.*
Keller, Frederick Rudolph	Philadelphia, Pa	*Syrupus.*
Keller, George Dering	Carlisle, Pa	*Education for Pharmacists.*
Keller, John William	Altoona, Pa	*Emulsions.*
Kelly, Wm. Clarence	Chester, Pa	*Acetic Acid.*
King, Wm. Henri	Philadelphia, Pa	*Opium.*
Kinsey, Albert Henry	Galion, Ohio	*Dispensing by Drops.*
Klump, George Lewis	Allentown, Pa	*Abuses in Pharmacy.*
Koenig, William Matthew	Reading, Pa	*Prunus Virginiana.*
Krum, Charles Franklin	Catawissa, Pa	*Phosphorus.*
Kusenberg, Louis Carl	Reading, Pa	*Hydrogen Sulphide.*
Kutzner, John Douty	Shamokin, Pa	*Chemical Affinity.*
Laubach, Wm. Harrison, Jr	Catasauqua, Pa	*Biborate of Lithium.*
Lawall, Charles Elsner	Catasauqua, Pa	*Glyceritum Amyli.*
Leeds, Harry Bellerjeau	Atlantic City, N. J	*Rhus Aromatica.*
Leithead, Robert, Jr	Rockland, Del	*Pilocarpus Pinnatifolius.*
Leonard, Isaac Edward	White Haven, Pa	*Oleum Gaultheria.*
Lowe, Clement Belton	Philadelphia, Pa	*Silico Fluorides.*
McCauly, John Sloan	Philadelphia, Pa	*Jamaica Dogwood.*
McCausland, James Ralston	Philadelphia, Pa	*The Value of the Estimation of Laudanum.*
McConn, William John	Philadelphia, Pa	*Precipitate from Tinct. Sanguinariæ*
McCoy, Franklin	Bellville, Ohio	*Maydis Stigmata.*
McKenzie, Tracy	Mexia, Texas	*Cinchona Bark.*
McVicker, John Clarence	Morgantown, W. Va	*Mineral Waters.*
Maddock, George Frederick	Monmouth, N. J	*Salts of Lithium.*
Maitland, Henry Wilbur	Philadelphia, Pa	*Success in Pharmacy.*
Martin, Emlen	Rancocas, N. J	*Cantharis.*
Martin, John Edwin	Jersey Shore, Pa	*Emulsions.*
Miller, Harry Lovett, Jr	Morris, Ill	*Analysis of Phosphoric Acid.*
Maguire, Andrew Herman Joseph	England	*Tincture of Nux Vomica.*
Moerk, Frank Xavier	Wilmington, Del	*Malt.*
Moore, Christian	Ardmore, Pa	*Bismuth.*
Morris, John August	Philadelphia, Pa	*Syrups.*
Murjahn, Louis	Philadelphia, Pa	*Teucrium Scordium.*
Murrow, James White	Philadelphia, Pa	*Cascara Sagrada.*
Murtagh, John Anthony	Germantown, Pa	*Pil Chalybeate.*
Nock, Thomas Oliver	Camden, Del	*Abstracta.*
Oberholtzer, Charles Herman	Phœnixville, Pa	*Maydis Stigmata.*
Ogilby, William	Carlisle, Pa	*Mineral Acids.*
Olmstead, Frank Boyd	Waterton, N. Y	*Potassii Iodidum.*
Osborne, Melmoth Mercer	Philadelphia, Pa	*Boroglyceride.*
Owen, Gomer David	Newark, Ohio	*Bromide of Potassium.*
Pattengill, Evan Ingstrum	Elmira, N. Y.	*Fluid Extracts.*
Petrie, Edward Sing	Oswego, N. Y	*Cinnamic Acid.*
Pettigrew, Harlan Page	Sioux Falls, Dakota	*Oils of Birch and Wintergreen.*
Pierce, William Chandler	Wilmington, Del	*Adeps Benzoinatus.*
Plenge, Henry Charles	Charleston, S. C	*Aloin.*
Pool, James Arthur	Earlville, Ill	*Granulated Citrate of Magnesia.*
Preston, Edmond, Jr	Fallston, Md	*Phytollaccæ Radix.*
Prickitt, Elmer Delaney	Mt. Holly, N. J	*Corn Silk.*
Reading, William Van Dyke	Norristown, Pa	*Percolation.*
Reisert, William	Philadelphia, Pa	*Bismuth Breath.*
Ritter, Charles Templeton	Allentown, Pa	*Iron Preparations.*
Rohrer, Joshua Ellis	Carlisle, Pa	*Caulophyllum Thalictroides.*
Rumsey, Walter Arabin	Salem, N. J.	*Cornus Florida.*
Ryan, Frank Gibbs	Elmira, N. Y.	*Magnesii Carbonas.*
Schroeder, Luther Johnson	Columbia, Pa	*Extractum Glycyrrhizæ.*
Schuldt, Henry Francis	Philadelphia, Pa	*Guarana.*
Sharp, Edward Wolf	Seaville, N. J	*Electricity.*
Sherman, Austin Charles	Girardville, Pa	*Sublimation.*

NAME.	PLACE.	SUBJECT OF THESIS.
Singer, William August	Peoria, Ill	*Estimation of Iron Ore.*
Spangler, George Ellsworth	Lebanon, Pa	*Aqua Pruni Serotinæ.*
Stahl, B. Franklin	Marietta, Pa.	*Acidum Hydrocyanicum Dilutum.*
Steinmetz, Charles Mays	Reading, Pa	*Elixirs.*
Streitz, Alexander Frederick	North Platte, Neb	*White Wax and its Adulterations.*
Sypherd, Clarence Draper	Sadlersville, Md	*Rhubarb.*
Tedford, Edward Weeks	Maryville, Tenn	*Deportment of Students.*
Thomas, James Harry	Philadelphia, Pa	*Prinos Verticillatus.*
Trist, Edwin Allen	Philadelphia, Pa	*Scutellaria Lateriflora.*
Trout, John Henry	Chester, Pa	*Chelidonium Majus.*
Urben, Fred. Lang.	Pittsburg, Pa	*Ether.*
Valentine, Frank Elliott	Urbana, Ohio	*Infusum Digitalis.*
Vaughan, Parry Wyche	Durham, N. C	*Prunus Virginiana.*
Ward, John Martin Broomall	Chester, Pa	*Unguentum Aquæ Rosæ.*
Watson, William Porter	Clearfield, Pa	*Potassium.*
Weaber, John Alvin	Fredericksburg, Pa	*Guaiacum.*
Weber, Alexander Arthur	Mahanoy City, Pa	*Verbena.*
Weirich, George Alcimus	Minersville, Pa	*Boldo.*
Wenner, Alfred Jefferson	Allentown, N. J	*Oleic Acid.*
Wickham, Anthony Smith	Wheeling, W. Va	*Potassii Bromidum.*
Williams, George Thomas	Wilmington, Del	*Syrupus Calcii Lactophosphas.*
Wilson, Elmer Ellsworth	Bucks Co., Pa	*Pharmaceutical Manipulations.*

Dakota	1	New York	7
Delaware	6	North Carolina	2
England	2	Ohio	9
Georgia	2	Pennsylvania	81
Illinois	4	South Carolina	1
Iowa	1	Tennessee	1
Kansas	1	Texas	1
Maine	4	Virginia	1
Maryland	3	West Virginia	3
Missouri	1	Wisconsin	3
Nebraska	1		—
New Jersey	14		149

The following graduates have made application for Certificates of Membership since the Annual Meeting:

Clayton R. Myers,	Class 1878	Emlen Martin,	Class 1884
Theodore Sprissler,	" 1879	Henry F. Schuldt,	" 1884
Milton S. Falck,	" 1884	Ephraim Z. Hoffman,	" 1884
Alfred J. Wenner,	" 1884	Samuel D. Crawford,	" 1884

ACTIVE MEMBERS BY RESOLUTION.

The following resolution appeared in the minutes of the First Annual Meeting of the Alumni Association :—

"*Resolved*, That all graduates of the Philadelphia College of Pharmacy, previous to 1850, be admitted as members of the Association, and that they be entitled to all the rights and privileges of members."

The following list of names comprises those who were made active members of the Association by the above resolution :

DECEASED MEMBERS IN ITALIC.

1826.

Chas. H. Dingee.
William Sharp.
Chas. McCormick, address unknown.

1827.

Alexander Dawson, address unknown.

1828.

Geo. D. Coggeshall, address unknown.
John H. Dingee.
Chas. Hathwell.

1829.

John C. Allen, 335 S. 5th St., Phila., Pa.
Jos. H. Brooks.
Robeson Moore.
Chas. E. Pleasants.
Franklin R. Smith, M. D., St. Paul, Minn.
Joseph Scattergood.
Wm. R. Fisher.

1830.

Edward Brooks, address unknown.
Chas. D. Hendry, "
Dillwyn Parrish, 1017 Cherry St., Phila., Pa.
Isaac Jones Smith.

1832.

Richard M. Reeve.
John Bringhurst.

1833.

Samuel W. Brown, address unknown.
Wm. P. Hansford, "
Edward Hopper, 323 Walnut St., Phila., Pa.
Thos. J. Husband, N. W. cor. Third and Spruce Sts., Phila., Pa.
Thos. H. Powers.
Samuel Simes, 2033 Chestnut St., Phila., Pa.
Jos. C. Turnpenny, 813 Spruce St., Phila., Pa.
Watson J. Welding.

1834.

Wm. B. Chapman.
Aug. J. H. Duhamel.
Wm. Ellis.
Alfred Guillou, address unknown.
Stephen Procter.
Ambrose Smith, 1311 Arch St., Phila., Pa.
Samuel Thompson.
John H. Tilghman, address unknown.
David Trimble, "
Joseph Trimble, "

1835.

James Cockburn, Jr., address unknown.
Jonathan Evans, Jr.
James Hopkins, 2018 Spruce St., Phila., Pa.
Wm. R. Kitchen.
Clement J. Lee, address unknown.
Isaac J. Martin, "
A. J. Olmstead, "
Richard Price, "
Charles Shreve.

1836.

Henry C. Blair.
John W. Simes, Jr., S. E. cor. 22d and Market Sts., Phila., Pa.
Jos. M. Turner.

1837.

John Goodyear, N.W. cor. 17th and Pine Sts., Phila., Pa.
Wm. L. Hasbrook, address unknown.
Benj. F. Hœckley, 462 N. 4th St., Phila., Pa.
Thos. R. F. Mitchell, address unknown.
Gustavus Ober, "
Wm. Procter, Jr. (Professor.)
James Levis Elliot, M.D., 1719 Pine St., Phila., Pa.
Robert J. Kennedy, address unknown.

1838.

Henry Brooks, address unknown,
Thos. W. Harris, "
Wm. E. Knight, S. E. cor. 10th and Locust Sts., Phila., Pa.
Claudius B. Linn, 13 S. Front St., Phila., Pa.
Robert B. Potts.

1838.

Richard Rushton.
Dickinson A. Woodruff, address unknown.
Henry W. Worthington.
Chas. W. Simons, address unknown.

1839.

Thos. Haines, address unknown.
Thomas C. Hopkins.
Walter Shinn.

1840.

Wm. H. Corie, address unknown.
John W. Douglas, Chambersburg, Pa.
Albert S. Letchworth, 534 N. 4th St., Phila., Pa.
Benj. I. Ritter.

1841.

J. Crawford Dawes, 36th St. and Gray's Ferry Road, Phila., Pa.
Caleb H. Needles, S. W. cor. 12th and Race Sts., Phila., Pa.

1842.

Peter Babb, address unknown.
Wm. G. Baker, address unknown.
Wm. J. Carter.
Adolph P. Grotjan.
Edward Parrish (Professor).
Wm. J. Jenks, 461 Marshall St., Phila., Pa.
Wm. H. Schively, 121 Harvey St., Germantown, Pa.
Laurence Turnbull, M. D., 1502 Walnut St., Phila., Pa.
Samuel Wetherell, address unknown.

1843.

Caverly Boyer, address unknown.
Edward Donnelly, address unknown.
Daniel S. Jones, N. W. cor. 12th and Spruce Sts., Phila., Pa.
Joshua S. Jones, address unknown.
Andrew McKim, address unknown.

1844.

Robt. C. Brodie, S. W. cor. 20th and Callowhill Sts., Phila., Pa.
Robt. Colton Davis, S. E. cor. 16th and Vine Sts., Phila., Pa.
Thos. Estlack, 1826 Market St., Phila., Pa.
Thos. S. Wiegand, 3742 Market St., Phila., Pa.
Jacob L. Smith, 1034 Green St., Phila., Pa.
Alfred B. Taylor, 31 S. 11th St., Phila., Pa.
Geo. H. Mitchell, address unknown.
Wm. St. Clair Nichols, address unknown.
Silas H. Wentz.

1845.

Thos. Leidy, address unknown.
Joseph A. McMakin.
Wm. H. Needles, Walnut Lane, cor. Green St., Germantown, Pa.

1845.

Wm. B. Webb, S. W. cor. 10th and Spring Garden Sts., Phila., Pa.
Caleb R. Keeney, N. W. cor. 16th and Arch Sts., Phila., Pa.

1846.

Jacob L. Baker, address unknown.
John Dickson.
Robt. England, S. W. cor. 10th and Catharine Sts., Phila., Pa.
Hiram C. Lee, address unknown.
Geo. W. Patrick, M. D.
Robt. M. Patterson.
Thos. J. Scott, care B. F. Bruce, Lexington, Ky.
Benjamin R. Smith, 4717 Germantown Ave., Phila., Pa.
Chas. F. Stoever, address unknown.
Peter T. Wright, "
John A. Whartenby.

1847.

Chas. Bullock, 528 Arch St., Phila., Pa.
James H. Crew, address unknown.
Evan T. Ellis, 145 S. Front St., Phila., Pa.
T. Curtis C. Hughes.
Samuel Lenher.
John R. Lewis, address unknown.
G. Graves Louden, "
Chas. S. Rush, "
Alfred K. Scholl.
Alfred Lafayette Taylor.
N. Spencer Thomas, Elmira, N. Y.

1848.

John R. Andrews, address unknown.
Samuel M. Bines, 114 S. 4th St., Phila., Pa.
Chas. M. Cornell, address unknown.
Franklin C. Hill, Princeton College, Princeton, N. J.
James Laws, Jr., M. D., 1936 Spruce St., Phila., Pa.
Chas. A. Santos, Norfolk, Va.
John A. Springer, address unknown.
Edmund Pollitt, 330 Chestnut St., Camden, N. J.
Geo. T. Wiggan, address unknown.
Chas. M. Wilkins, Philadelphia, Pa.

1849.

Chas. H. Bache.
Samuel L. Costill, address unknown.
Chas. Hartzell, "
Samuel Hastings, "
Wm. W. D. Livermore.
T. Morris Perot, 1810 Pine St., Phila., Pa.
Isaac W. Stokes, Medford, N. J.
Avery Tobey, address unknown.
Edmund A. Crenshaw, 528 Arch St., Phila., Pa.
Oscar Steel, address unknown.

Total, 146.

List of Active Members

OF THE

ALUMNI ASSOCIATION

OF THE

Philadelphia College of Pharmacy.

1830.

Parrish, Dillwyn, 1017 Cherry St., Phila., Pa.

1841.

Needles, Caleb H., S. W. cor. Twelfth and Race Sts., Phila., Pa.

1842.

Jenks, Wm, J., 160 N. Third St., Phila., Pa.

1844.

Brodie, Rob't C., S. W. cor. Twentieth and Callowhill Sts., Phila., Pa.
Davis, Robert Colton, S. W. cor. Sixteenth and Vine Sts., Phila., Pa.
Wiegand, Thos. S., 3742 Market St., Phila., Pa.

1845.

Keeney, Caleb R., N. W. cor. Sixteenth and Arch Sts., Philadelphia, Pa.

1849.

Crenshaw, Edmund A., 528 Arch St., Phila., Pa.

1850.

Bunting, Samuel S., N. E. cor. Tenth and Spruce Sts., Phila., Pa.

1853.

Gutekunst, Fred'k, 712 Arch St., Phila., Pa.
Sheaff, John F., 114 S. Fourth St., Phila., Pa.

1854.

Bower, Henry, cor. Gray's Ferry Road and Twenty-ninth St., Phila., Pa.
Lemberger, Jos. L., Lebanon, Pa.
Miller, William J., 224 N. Third St., Phila., Pa.

1855.

Armstrong, Jas. A., M. D., Camden, N. J.
Bakes, Wm. C., Ocean Grove, N. J.
Bancroft, Jos. W., care Loyd Hoppen, 1316 Vine St., Phila., Pa.
Bannvart, Chas. J., Treasury Department, Washington, D. C.
Griffith, J. Clarkson, 134 Stanton Ave., Chicago, Ill.
Lawall, Edmond, Allentown, Pa.
Rittenhouse, Henry N., 214–220 N. Twenty-second St., Phila., Pa.
Robbins, Alonzo, S. E. cor. Eleventh and Vine Sts., Phila., Pa.

1856.

Evans, Jr., Wm., 252 S. Front St., Phila., Pa.
Warner, Wm. R., 1228 Market St., Phila., Pa.

1857.

Blinkhorn, George, S. E. cor. Tenth and Chestnut Sts., Phila., Pa.
Campbell, Samuel, 1412 Walnut St., Phila., Pa.
Hancock, Chas. W., 3425 Spring Garden St., Phila., Pa.
Hughes, C. Collin, S. W. cor. Eighth and Race Sts., Phila., Pa.
Mercein, James R., 41 Montgomery ave., Jersey City, N. J.
Massenburg, T. L., Macon, Georgia.

1858.

Fox, Peter P., N. E. cor. Twenty-third and Spruce Sts., Phila., Pa.

1859.

Coombe, Thomas R., Delanco, N. J.
Dodson, Chas. G., N. E. cor. Fifth and Chestnut Sts., Phila., Pa.
Eberle, Chas. L., cor. Mill and Main Sts., Germantown, Pa.
Geyer, Henry T., No. 20 S. Delaware Ave., Phila., Pa.
Jefferson, Chas. L., Zoological Garden, Thirty-fifth and Girard Ave., Phila., Pa.
Richards, Geo. K., N. W. cor. Tenth and Market Sts., Phila., Pa

1860.

Bolton, Joseph P., Germantown, Pa.
Boyd, John W., address unknown.
Franklin, Thomas H., N. E. cor. Twenty-fifth and Jefferson Sts., Phila., Pa.
Gegan, J. J., 812 S. Second St., or cor. 6th and Bainbridge Sts., Phila., Pa.
Newman, Geo. A., 380 Myrtle St., Brooklyn, N. Y.
Parrish, Wm. G., M. D., 477 Hudson St., New York City.
Vogelbach, Herman A., Melrose, Alachua Co., Florida.

1861

Abernethy, J. Maxwell, 188 Newark Ave., Jersey City, N. J.
Brown, Frederick, Jr., N. E. cor. Fifth and Chestnut Sts., Phila., Pa.
*Githens, Wm. H. H., M. D., 2033 Spruce St., Phila., Pa.
Heydenreich, Emil, 169 Atlantic Ave., Brooklyn, N. Y.
Stoever, J. Melancthon, M. D., Chester, Pa.

1862.

Brown, Albert P., Camden, N. J.
Blithe, Henry, 3212 Market St., Phila., Pa.
Chipman, Edward D., Unionville, Orange Co., Va.
Diehl, C. Louis, (Prof.,) cor. Third and Broadway, Louisville, Ky.
Dobbins, Edward T., 1808 S. Rittenhouse Square, Phila., Pa.
Jacobs, Henry H., 622 Race St., Phila., Pa.
Miller, Adolph W., M. D., N. W. cor. Third and Callowhill Sts., Phila., Pa.
Naulty, Wm. H., 69 Duane St., N. Y.
Peck, Henry T., M. D., Coulter House, Germantown, Pa.
Senneff, Jacob, address unknown.
Shoemaker, Richard M., N E. cor. Fourth and Race Sts., Phila., Pa.
Smedley, Bennett L., S. E. cor. Twenty-first and Vine Sts., Phila., Pa.
Witmer, David L., cor. Fifth and Germantown Ave., Phila., Pa.

1863.

Eldridge, Geo. W., S. W. cor. Seventh and Thompson Sts., Phila., Pa.
Fox, Daniel S., 323 Franklin St., Reading, Pa.
Hambright, Geo. M., 584 State St.,Chicago, Ill.
Kirkbride, Joseph C., St. Louis, Mo.
McIntyre, Wm., 2229 Frankford Ave., Phila., Pa.
Mellor, Alfred, 214-220 N. 22d St., Phila., Pa.
Murray, Talbot C., 296 Delaware Ave.,Washington, D. C.

1863.

Ruan, James, 618 Emlin St., Phila., Pa.
Tomlinson, Edwin, M. D., Gloucester City, N. J.
Tilge, F. A., 25 N. Sixth St., Phila., Pa.

1864.

Buehler, Ed. H., Room 6, Portland Block, Chicago, Ill.
Croft, Henry C., Park Ave. and Madison St., Baltimore, Md.
Ebert, Albert E. (Prof.), 426 State St.,Chicago, Ill.
Jeannot, G. E., Louisville, Ky.
Jones, Edward C., S. E. cor. Fifteenth and Market Sts., Phila., Pa.
McCollin, S. Mason, M. D., 1128 Arch St., Phila., Pa.
Moore, Joseph E., 154 Newark Ave., Jersey City, N. J.
Morris, Henry B., address unknown.
Newton, Alfred W., 2530 N. Sixth Street, Philadelphia, Pa.
Simes, J. Henry C., M. D., 2033 Chestnut St., Philadelphia, Pa.

1865.

Blair, Andrew, S. W. cor. Eighth and Walnut Sts., Phila., Pa.
Blomer, Aug. P., M. D., N. W. cor. Moyamensing Ave. and Dickinson St., Philadelphia, Pa.
Ditman, Andrew J., 10 Astor House, N. Y.
Gross, Geo. A., 119 Market St., Harrisburg, Pa.
Heller, Marx M., 24 Orange St., Cleveland, O.
Hillery, J. F., address unknown.
Huber, Milton, Williamsport, Pa.
Kennedy, Chas. W., 447 Maria St., Phila., Pa.
Lindsay, John B., address unknown.
McElroy, Jas. B., Twenty-fourth and Alabama Ave., San Francisco, Cal.
Milner, Jas. P., M. D., N. E. cor. Sixth and Lombard Sts., Phila., Pa.
Moser, Americus H., Allentown, Pa.
Orth, Fred'k C., Holmesburg, Phila., Pa.
Preston, David, S. W. cor. Ninth and Lombard Sts., Phila., Pa.
Ranck, J. W., M. D., 3922 Germantown Ave., Phila., Pa.
Rinker, Wm. H., S. W. cor. Mervine and Norris Sts., Phila., Pa.
Smith, Wilson B., address unknown.
Vogelbach, Edmond, S. W. cor. Frankford Ave. and York St., Phila., Pa.
Walker, John T., M. D., N. W. cor. Second and Columbia Ave., Phila., Pa.
Wendel, H. Edward, S. E. Cor. Third and George Sts., Phila., Pa.
White, James T., cor. Twenty-first and Pine Sts., Phila., Pa.

1866.

Allen, Wm. E., 2237 Mascher St., Phila., Pa.
Blair, Henry C., S. W. cor. Eighth and Walnut Sts., Phila., Pa.
Braddock, Isaac A., Haddonfield, N. J.
Campbell, Hugh, Osceola Mills, Pa.
Kneeshaw, Wm. W., N. E. cor Twenty-first and Lombard Sts., Phila., Pa.
Laird, Wm. R., 250 Washington St., Jersey City, N J.
Lippincott, Robt. C., 717 N. Delaware Ave., Phila., Pa.
McPike, Wm. C., Atchison, Kansas.
Milleman, Philip, cor. Milwaukee Ave. and Division St., Chicago, Ill.

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*Resigned.

1866.

Miliac, John A., S. E. cor. Tenth and Bainbridge Sts., Phila., Pa.
Newbold, Thos. M., S. E. cor. Forty-first and Chestnut Sts., Phila., Pa.
Newton, John S., M. D., 4106 Hutton St., West Phila., Pa.
Painter, Emlen, M. D. (Prof.), cor. Clay and Kearney Sts., San Francisco, Cal.
Remington, Jos P. (Prof.), N. E. cor. Thirteenth and Walnut Sts., Phila , Pa.
Riley, Chas. W., 1115 Race St., Phila. Pa.
Ross, Hugh H., N. W. cor. Thirteenth and Brown Sts., Phila., Pa.
Sayre, Lucius E., S. W. cor. Eighteenth and Market Sts., Phila., Pa.
Shoemaker, Allan, N. E. cor. Fourth and Race Sts., Phila., Pa.
Shoemaker, Jr., Benjamin, 1926 N. Seventeenth St., Phila., Pa.
Simson, Wm. H., Halifax, N. S. (care Brown Bro. & Co.).
Souder, Jos. A., N. E. cor. Sixth and McKean Sts., Phila., Pa.
Strehl, Louis, 426 State St., Chicago, Ill.
Walker, Thos. A , S. E. cor. Fifteenth and Market Sts., Phila., Pa.

1867.

Allaire, Chas. B., 108 Main St., Peoria, Ill.
Bartram, Ernest, 1513 Vine St., Phila., Pa.
Borhek, Jr., J. T., Bethlehem, Pa.
Boring, Edwin M., N. E. cor. Tenth St. and Fairmount Ave., Phila., Pa.
Brown, Sam'l A., M. D., 12 Market St., New York City.
Brown, Thos. J., 233 S. Ninth St., Phila., Pa.
Buckman, Jas., S. E. cor. Eighth and Green Sts., Phila., Pa.,
Carberry, P. J. L., M. D., No. 1000 Green St., Phila., Pa.
Erwin Bertine S., Bethlehem, Pa.
Haig, Chas. R., N. W. cor. Nineteenth and Master Sts., Phila., Pa.
Harner, Jas. M., S. Fourth St., cor. Fifth St., Brooklyn, N. Y.
Himmelwright, F. E., M. D., 2002 N. Eighth St., Phila., Pa.
Hoffman, John V., 748 Madison Ave., Baltimore, Md.
Jones, Edward B., Mt. Holly, N. J.
Kurtz, Augustus M., San Francisco, Cal.
Little, Arthur H., address unknown.
Moore, Chas. C., 2135 Arch St., Phila., Pa.
Roche, Wm. F., S. E. cor. Fifteenth and South Sts., Phila., Pa.
Shivers, Jr., Chas., N. E. cor. Seventh and Spruce Sts., Phila., Pa.
Simes, Samuel, N. E. cor. Twenty-second and Market Sts., Phila., Pa.
Swaim, Geo. M., address unknown.
Vandegrift, Isaac P., 166 S. Fourth St., cor. Fifth Ave., Brooklyn, N. Y.
Webb, Sam'l W., 1706 Sydenham St., Phila., Pa.
Weichselbaum, J., M. D., Chatham Square, Savannah, Ga.
Weidemann, Charles A., M. D., 543 N. Twenty-second St., Phila., Pa.
Wike, Albert D., Marietta, Pa.

1868.

Beck, J. W., Lancaster, Ohio.
Boyd, Abraham, Tabor Block, Denver, Col., per Wiswall, agt. Life Ins. Co.
Bradley, Thos. F., 1221 S. 13th St., or 1228 Market St., Phila., Pa.

1868.

Bronson, Eugene C., address unknown.
Clark, A. B., Jr., 9 Main St., Galesburg, Ill.
Day, Robert L., Sommerville, N. J.
Dilks, S. Levin, N. E. cor. Sixth and Pine Sts., Phila., Pa.
Elliott, Frederick G., 141-43 N. Fourth St., Phila., Pa.
England, Howard, 228 Newark Ave., Jersey City, N. J.
Estlack, Horace W., 1233 S. Seventeenth St., Phila., Pa.
Farr, Wm. L., Oxford, Ohio.
Foulke, James, M. D., 250 Washington St., Jersey City, N. J.
Fronheiser, Jas. J., Johnstown, Pa.
Harrop, Joseph, Leavenworth, Kansas.
Hecker, Jacob K., 1414 N. Second St., Phila., Pa.
Jordan, Henry A., Bridgeton, N. J.
Klump, Chas. C., Allentown, Pa.
Karch, Joseph, Ninth and Cumberland Sts., Lebanon, Pa.
Kay, Samuel D., 224 Monticello St.; or, J. C. C. Hospital, Jersey City, N. J.
Lillard, Benjamin, 56 Lafayette Place, N. Y.
McInall, Jr., Edward, Wilmington, Del.
Mathews, Chas. C., Shippensburg, Pa.
Marshall, Robert T., 1215 Market St., Phila., Pa.
Parrish, Clemmons, 27 Park Place, N. Y.
Raser, Wm. H., care Stillman & Fulton, 53 Cedar St., N. Y.
Rice, Wm. C., Jr., 702 N. Second St., Phila., Pa.
Seybert, Robert S., Hillsboro', Ohio.
Shoffner, John N., Butte, Montana.
Snaw, Jos. B., M. D., Del. Water Gap, Monroe Co., Pa.
Simon, Matthias, La Crosse, Wis.
Shryock, Allen, 1213 Green St., Phila., Pa.
Smith, Homer A., address unknown.
Stackhouse, George P., 2324 Christian St., Phila., Pa.
Steifel, Louis, 346 Dillwyn St., Phila. Pa.
Thomas, Frank W., Dayton, Ohio.
Wilson, Wm., 106 Broadway (or Pine St.), N. Y.

1869.

Bates, Louis A., 739 Sixth Ave., N. Y. City.
Bell, Jas. S., Memphis, Tenn.
Davis, Harry H., N. E. cor. Third and Kaighn's Point Ave., Camden, N. J.
Fruh, Carl D. S., 2321 Ridge Ave., Phila., Pa.
Husband, Thos., J., Jr., N. W. cor. Third and Spruce Sts., Phila., Pa.
Jones, D. Augustus, N. W. cor. Tenth and Market Sts., Phila., Pa.
Kelty, Clement, Salem, N. J.
Kennedy, Geo. W., 103 N. Centre St., Pottsville, Pa.
Krewson, Wm. E., N. E. cor. Eighth St. and Montgomery Ave., Phila., Pa.
Lamparter, Eugene, M. D., S. E. cor. Seventeenth and Reed Sts., Phila., Pa.
Merklein, Chas. H., M. D., No. 245 S. Eighth Street, Phila., Pa.
Moorhead, Wm. W., M. D., S. W. cor. Broad and South Sts., Phila., Pa.
Penrose, Stephen F., cor. Main and Broad St., Quakertown, Pa.
Pfromm, Adam, 233 N. Second St., Phila., Pa.
Phelps, Fred'k H., Jackson, Cal.
Reynolds, John J., Flemingsburg, Ky.
Robertson, Henry H., N. E. cor. Fifth and Chestnut Sts., Phila., Pa.

1869.

Sharp, Robt. P., M. D., Atglen, Chester Co., Pa.
Stein, Jacob H., 803 Penn St., Reading, Pa.
Taylor, Harry B., 1306 Girard Ave., Phila., Pa.
Treichler, L. Alpinus, cor. Main and Penn Sts., Germantown, Pa.
Unsicker, Charles B., Cincinnati, Ohio.
Ware, Samuel F., M. D., Cape May, N. J., or Wilmington, Del.

1870.

Chiles, Edward, Denver, Col.
Clark, Silas B., Townsend, Vt.
Connally, W. C., Atlanta, Ga.
Ehler, Wm. Rush, Eayrestown, N. J.
Hunter, Thos., M. D., S. W. cor. Fifteenth and Wharton Sts., Phila., Pa.
Hall, Jos. J., 41 Cedar St., Marshall, Tenn.
Hassenger, S. E. R., N. E. cor. Twenty-third and Fairmount Ave., Phila., Pa.
Herbert, Eugene, N. W. cor. Twelfth and Spruce Sts., Phila., Pa.
Kirkbride, Jos. J., M. D., 35 S. Nineteenth St., Phila., Pa.
Lee, Chas. S., 5221 Pear St., W. Phila., Pa.
McLaughlin, John T., Peoria, Ill.
Newbold, Henry A., S. E. cor. Forty-first and Chestnut Sts., W. Phila., Pa.
Rau, Eugene A., Bethlehem, Pa.
Schell, Harry D., 626 N. Fifteenth St., Phila.
Segrest, Lewis F., N. W. cor. Cedar and Cumberland Sts., Phila., Pa.
Supplee, Jesse L., N. E. cor. Thirteenth and Green sts., Phila., Pa.
Tomassevick, Leopold, St. Jago, Cuba.
Williamson, J. L., Meadville, Pa.
Wilhelm, J. Alexander, York, Pa.
Wenrich, Alfred B., 16 N. Thirteenth St., Phila., Pa.

1871.

Anthony, Joseph, 529 Broad St., Richmond, Va.
Camm, Henry V., 81 Commerce St., Bridgeton, N. J.
Ewing, Wm. G., 38 Union St., Nashville, Tenn.
French, Howard B., 410 Callowhill St., Phila.
Gramm, Edgar C., 4439 Frankford Ave., Frankford, Phila., Pa.
Hoskinson, J. Thos., Jr., N. W. cor. Front and Norris Sts., Phila., Pa.
Huneker, John F., 33 N. Twelfth St., Phila. Pa.
Ink, Parker P., Washington, Iowa.
Jungman, Julius, New York City, N. Y.
Kadish, Chas. J., Chicago, Ill.
Kannal, Emmet, Kansselaer, Ind.
Lee, Emmor H., 410 Callowhill St., Phila., Pa.
Lehman, J. Ehrman, Camden, N. J.
McKelway, Geo. I., 1410 Chestnut St., Phila.
Odenwelder, A. J., Easton, Pa.
Paxson, Elliot D., care Caswell, Hazzard & Co., New York City.
Potts, Thos. H., S. E. cor. Broad and Parrish Sts., Phila., Pa.
Raser, John B., 154 N. Sixth St., Reading, Pa.
Shaw, Lonis, Cheyenne, W. T.
Sniteman, Chas. C., Neillsville, Wis.
Snyder, E. D., Toledo, Ohio.
Vernon, Geo. R., M. D., Clifton Heights, Delaware Co., Pa.
Weaver, John A., 210 Madison Ave., Easton, Pa.
Weber, Fred'k C., M. D., Silver Cliff, Col.
Weber, William, S. E. cor. Fifteenth and Thompson Sts., Phila., Pa.
Worthington, J. W., N. W. cor. Eleventh and Arch Sts., Phila., Pa.

1872.

Addington, Wm. B., 700 Olive St., St. Louis, Mo.
Bille, George, S. E. cor. Second and Thompson Sts., Phila., Pa.
Bolton, Alfred H., 742 Christian St., Phila., Pa.
Cave, Joseph, Handel Villa, Liverpool Road, Lancashire, Eng.
Dawson, John H., N. W. cor. Twenty-third and Valencia Sts., San Francisco, Cal.
Evans, Chas. B., Augusta, Ga. (care Sholes & Co.)
Fraser, Horatio N., cor. Wabash Ave. and Sixteenth St., Chicago, Ill.
Matos, Louis A., 3935 Aspen St., West Phila.
McElhenie, Thos. D., 259 Ryerson St., Brooklyn, N. Y.
Mitchell, Chas. L., M. D. (Prof.), N. E. cor. Ninth and Race Sts., Phila., Pa.
Mutchler, Henry M., Junction, N. J.
Procter, Wallace, S. W. cor. Ninth and Lombard Sts., Phila., Pa.
Schiedt, Jacob A., 123 N. Seventh St., Phila.
Shrum, John H., Lancaster, Pa.
Thiebaud, Chas. O., Vevay, Ind.
Wiley, Joseph, 123 N. Seventh St., Phila., Pa.

1873.

Addis, S. D., M. D., Penna. Steamship Company.
Antill, Jos. V., N. W. cor. Fifth and Dauphin Sts., Phila., Pa.
Apple, Ammon A., N. E. cor. Second and Dauphin Sts., Phila., Pa.
Beck, J. Howard, M. D., Ocean Grove, N. J., (P. O. box 66).
Bond, Monroe, M. D., 2500 N. Broad St., Phila., Pa.
Brakeley, Philip F., Philipsburg, N. J.
Bridger, Paul, 745 Spring Garden St., Phila., Pa.
Chiles, Richard T., Frankford, Ky.
Conlyn, Thos. A., Park Ave. and Madison St., Baltimore, Md.
Conrath, Adam, 630 Chestnut St., Milwaukee, Wis.
Cook, John E., 1422 S. Thirteenth St., Phila., Pa.
Delker, William, N. E. cor. Seventh and Arch Sts., Phila., Pa.
Dubois, L. Stanley, P. O. box 101, Paducah, Ky.
Eberle, Herman T., care G. E. Eberle & Son, Watertown, Wis.
Flint, John Henry, Marysville, Yuba Co., Cal.
French, Arthur S., East Hampton, L. I., N. Y.
Gill, Wm. C., N. W. cor. Eleventh and Sommerville Sts., Phila., Pa.
Griggs, Allan G., Ottowa, Ill.
Gross, Edward Z., 119 Market St., Harrisburg, Pa.
Guth, Morris G., M. D., Mount Pleasant, Ia.
Harper, Frank M., 45 E. Main St., Madison, Ind.
Hohl, August, N. E. cor. Fourth and Girard Ave., Phila., Pa.
Hurt, James F., Broadway, Columbia, Mo.
Jefferson, Edward, S. E. cor. Sixth and Bainbridge Sts., Phila., Pa.
Jones, J. Morris, Bethlehem, Pa.
Keasbey, Henry G., 328-34 N. Front St., Phila., Pa.
Kielhorn, Henry, cor. Ash St. and Christian Ave., Indianapolis, Ind.
Kille, Geo. Henry, N. W. cor. Tenth and Montgomery Ave., Phila., Pa.
Lange, Chas. R., address unknown.
Lerch, Wm. I., cor. Twenty-first and Vine Sts., Phila., Pa.

1873.

Magill, B. Morris, N. W. cor. Seventeenth and Columbia Ave., Phila., Pa.
Martin, Samuel W., Lewistown, Pa.
Martindale, Wm. N., 1504 Vine St., Phila., Pa.
Mattison, Richard V., M. D., 328–34 N. Front St., Phila., Pa.
McCrea, J. Howard, Norristown, Pa.
Meyer, C. Carroll, 1802 Callowhill St., Phila., Pa.
Potts, David G., N. W. cor. Eighteenth and Master Sts., Phila., Pa.
Radefeld, Frederick, 500 Lombard St., Phila., Pa.
Schmidt, Henry, Newark, N. J.
Smith, A. E., Williamsburg, Va.
Stifel, Albert F., M. D., Twelfth St., Wheeling, W. Va.
Stewart, A. B., Duncannon, Pa.
Stem, Wm. N., S. W. cor. Twentieth and Callowhill Sts., Phila., Pa.
Truckenmiller, Geo. L., box 187, Petersburg, Ill.
Wood, James P., 25 S. Front St., Phila., Pa.
Willard, Jr., Roland, Haddonfield, N. J.
Zimmerman, Gustavus A., Johnstown, Pa.

1874.

Acker, Louis K., Franklin, Pa.
Allen, James Armstrong, address unknown.
Bakhaus, Edmund, S. W. cor. Freeman and Clark Sts., Cincinnati, O.
Banks, Wm. Baker, S. E. cor. Nineteenth and Shirley Sts., Phila., Pa.
Bantley, Bartholomew, Sixth and Spring Sts., Milwaukee, Wis.
Biddle, Chas. J., 3348 Market St., W. Phila., Pa.
Bryan, Harry N., M. D., 821 S. Third St., Phila., Pa.
Dawson, Jr., Edward S., 13 S. Salina St., Syracuse, N. Y.
Gleim, Francis H. E., Lebanon, Pa.
Hazlett, Edward E., M. D., Abilene, Dickinson Co., Kansas.
Hilton, Thos. C., Lock Haven, Pa.
Henry, Geo. S., Duncannon, Perry Co., Pa.
Hunter, David, M. D., Atlantic City, N. J.
Jacoby, Aaron P., care C. Jacoby, South Bethlehem, Pa.
Johnson, Geo. H., 2202 Ridge Ave., Phila.,Pa.
Jummel, Frank R., 627 S. Warren St., Trenton, N. J.
Keenan, Augustus H., 214 S. Main St.,Wilkesbarre, Pa.
Kingsbury, Howard, N. E. cor. Eleventh and Walnut Sts., Phila., Pa.
Kruell, Fred'k John, M. D., 318 Milwaukee Ave., cor. W Erie St., Chicago, Ill.
Latz, Fred'k Wm., Buffalo, N. Y.
Lescher, Geo. C., address unknown.
Lumb, Abraham L., 4783 Main St., Frankford, Phila., Pa.
Mattern, Wm. K., M. D., cor. Tenth St. and Germantown Ave., Phila., Pa.
Miles, John Joseph, Vicksburg, Miss.
Powers, Fred'k B., Ph.D., University of Wisconsin, Madison, Wis.
Rienhamer, Frederick, address unknown.
Stewart, Robert R., S. W. cor. Thirteenth and Fitzwater Sts., Phila., Pa.
Terrell, Thos. D., Columbia, Boone Co., Mo.
Tilton, Francis M , Haddonfield, N. J.
Walker, Samuel E., M. D., N. E. cor. Ninth and Catharine Sts., Phila., Pa.
Wellcome, Henry S., 8 Snowhill, London, Eng.
Williams, John L. (Rev.) Morgan Park, Ill.

1875.

Bibby, Walter E., M. D , S. E. cor. York and Tulip Sts., Phila., Pa.
Beidler, Samuel McGill, 1043 Leithgow St., or Fourth and Girard Ave., Phila., Pa.
Boisnot, Henry S., 1311 Broadway, cor. Thirty-fourth St., New York City.
Braddock, Wm. N., S. E. cor. Third and Elm Sts., Camden, N. J.
Clark, Louis G., Portland, Oregon.
Conner, William, cor. Main St. and Chelten Ave., Germantown, Phila , Pa.
Conrath, Frank, 296 Ninth St., Milwaukee, Wis.
Hartwig, Chas. F , 476 Milwaukee Avenue, cor. Chicago Avenue, Chicago, Ill.
Hopp, Lewis C., care A. Mayell & Co., Cleveland, O.
Jones, Howard G , N. W. cor. Twelfth and Spruce Sts., Phila., Pa.
Justice, Richard S., Fifth and Elm Sts., Camden, N. J.
McRoberts, Wm. B., Stanford, Ky.
Means, Wm. B., M. D., Lebanon, Pa.
Messing, Jacob. Jr., 1009 East Grand St., Elizabeth, N. J
Miller, Charles M., Mansfield, Ohio (St. James Hotel Block).
Mitchell, Wm. S., 3501 Cottage Grove Ave., Chicago, Ill.
Patterson, James L., cor. Ridge Ave. and Twenty-second St., Phila., Pa.
Poley, Warren H., 5106 Germantown Ave., Phila., Pa.
Reimann, Louis P., M. D., N. W. cor. Fifth and Poplar Sts., Philadelphia, Pa.
Shamalia, Geo. M., Lambertville, N. J.
Taylor, Joseph Y., 1412 Walnut St., Phila., Pa.
Thorn, Henry P., Medford, N. J.
Voelcker, Rudolph F. G., 217 Market St., Galveston, Texas.
Walch, Robert H., 3400 N. Twenty-second St., Phila., Pa.

1876.

Baker, Walter T., N. W. cor. Nineteenth and Oxford Sts., Phila., Pa.
Baur, Hugo F., 180 West Madison St.,Chicago, Ill.
Bley, Alphonso A. W., S. W. cor. Huntingdon and Jasper Sts., Phila., Pa.
Boerner, Emil L., Haas Block, Clinton St., Iowa City, Iowa.
Boileau, Wm. N. K., 4155 Main St., Frankford, Phila., Pa.
Bowen, Daniel A., Bridgeton, N. J.
Burge, James Oscar, Bowling Green, Ky.
Dilg, Philip H., 225 Eighteenth St., Milwaukee, Wis.
Emanuel, Louis, cor. Second and Grand Sts., Pittsburgh, Pa.
Fleming, Wm. F., 28 Olive St., St. Louis, Mo.
Fry, Wilbur W., Wilkesbarre, Pa.
Gentsch, Daniel C., New Philadelphia, Ohio.
Griffith, Charles, Johnstown, Pa.
Groves, John D., M. D., S. E. cor. Front and Catharine Sts., Phila., Pa.
Keller, A. Henry, Sutton, Clay Co., Neb.
Kœhler, Otto F., 19 Risington St., cor. Chrystie, New York City.
Kœmple, Robert August, 1396 Second Ave., New York City.
Kolp, Jacob L., S. W. cor. Tenth and Buttonwood Sts., Phila. Pa.
Kram, George W., M. D., South Bethlehem, Pa.
Linthicum, Theodric, Helena, Ark.
Martin, John C., Fifth Ave. and Madison St., Chicago, Ill.

1876.

McFerren, Jeremiah D., N. E. cor. Eleventh and Locust Sts., Phila., Pa.
Merritt, Joseph W., Woodbury, N. J.
Mitsch, Geo. Joseph, St. Paul, Minn.
Mœnkemœller, Chas., cor. Twenty-second and Market Sts., Wheeling, W Va.
Murray, F. Marion, M. D., Buffington, Ohio.
Railey, Irvin (care Logan Railey), Versailles, Ky.
Risk, Clarence H., cor. Charles and Reed Sts., Baltimore, Md.
Ritter, John, M. D., 372 West Indiana St., Chicago, Ill.
Schrœder, Henry, cor. Milwaukee and Chicago Aves., Chicago, Ill.
Sommers, Richard M., S. E. cor. Fifteenth and Oxford Sts., Phila., Pa.
Stewart, Frank E., M. D., 1031 Walnut St., Phila., Pa.
*Stockton, Wm. Wood, Huron, Dakota Ter.
Taylor, Walter A., 9 Peachtree St., Atlanta, Ga.
Taylor, Winfield S , N. E. cor. Perry and Southard Sts., Trenton, N. J.
Toulson, Milbourne A., Chestertown, Md.
Trimble, Henry, 632 Marshall St., or 145 N. Tenth St., Phila., Pa.
Von Cotzhausen, Louis, N. E. cor. Twenty-fourth and Thompson Sts., Phila., Pa.
Von Wittkamp, H. L., Jr., 533 N. Thirty-sixth St., W. Phila., Pa.
Warrington, Chas. W., N. W. cor. Fifth and Callowhill Sts., Phila., Pa.
Webber, Joseph Leroy, cor. Main and State Sts., Springfield, Mass.
White, Hugh, address unknown.
Witmer, John A., S. E. cor. Eleventh and Master Sts., Phila., Pa.

1877.

Ball, Wm. A., care A. A. Mellier, 709 and 711 Washington Avenue, St. Louis, Mo.
Bissell Emery G., Main St., Waterville Onedia Co., N. Y.
Brennecke, Robert, Watertown, Wis.
Burroughs, Silas M., 8 Snow Hill, London, Eng.
Christman, Harry W., S. E. cor. Mervine and Norris Sts., Phila., Pa.
Coxey, Joseph C., cor. Fifth and Mickel Sts., Camden, N. J.
Fisher, Henry, M. D., N. W. cor. Almond and Norris Sts., Phila., Pa.
Fulton, Joseph M., New London, Chester Co., Pa.
Landschutz, Peter, S. E. cor. Sixth and Venango Sts., or 2159 Philip St., Phila., Pa.
Martin, George, Jr., S. E. cor. Fifteenth and Oxford Sts., Phila., Pa.
Martin, John A., 967 N. Fifth St., cor. George, Phila., Pa.
Maulick, Wm. F., Columbia, Pa. (Lock Box 493.)
Moore, Frank, Cherry Hill, Cecil Co., Md.
Oleson, Olaf Martin, Market St., Fort Dodge, Iowa.
Parker, Fred. H., McIntyre Pharmacy, Eighth and Broadway, Auburn, N. Y.
Ross, David W., N. W. cor. Cumberland and Sepviva Sts., Phila., Pa.
Scheehle. Geo. P., Jr., N. W. cor. Fifteenth and Christian Sts., Phila., Pa.
Schwartz, Arthur, Trenton, N. J.
Smith, Albert H., cor. Main and Chelton ave., Germantown, Phila., Pa.

1877.

Stevenson, Richard G., N. W. cor. Sixth and Market Sts., Camden, N. J.
Trupp, Louis, S. W. cor. Fourth and Brown Sts., Phila., Pa.
Weiss, Louis, M. D., Del Norte, Col. (care Sheppard & Weiss), Lock Box 70.
Wright, Geo. S. R., 4502 Frankford Ave., Frankford, Phila., Pa.
Zacharias, Isadore, Columbus, Ga.

1878.

Albright, Franklin P., S. W. cor. Franklin and Berks St.; Phila., Pa.
Beetem, Jacob S., 7th and Market Sts., Wilmington, Del.
Brunner, Norman I., cor Sixth and Arch Sts., Macon, Ga.
Bullock, Lawrence M., M. D., Upland, Pa.
Button, Chas. E., 1558 Wabash Ave., Chicago, Ill.
Graybill, Peter, S. W. cor. Fourth and Scoll Sts., Covington, Ky.
Hall, Harry A., Danville, Ill.
Higgate, Wilford O., M. D., 4202 Lancaster Ave., West Phila., Pa.
Johnson, John G., Minneapolis, Minn.
Lilly, Chas. F., York, Pa.
Litz, Walter Kulp, 635 Broadway, N. Y.
Musser, Omar Henry, N. W. cor. Nineteenth and Arch Sts., Phila., Pa
Myers, Clayton R., 800 Walnut St., Phila., Pa.
Noss, Henry, Norwich, Conn.
Podolski, Louis A., S. W. cor. Sixth and Poplar Sts., Phila., Pa.
Porter, Geo. C., Hollister, Cal.
Prall, D. Elwyn, 111 S. Jefferson Ave., East Saginaw, Mich.
Reinecke, Ernest Wm., 1924 Carson St., South Side, Pittsburgh, Pa.
Shull, David F , 3928 Market St., West Phila., Pa.
Spenceley, C. E., N. E. cor. Seventh and Master Sts., Phila., Pa.
Strickler, Jacob, New Bloomfield, Perry Co., Pa.
Waterman, Benj. C., N. W. cor. Thirty-ninth and Aspen Sts., West Phila, Pa.
Weis, William, 306 N. Ninth St., Reading, Pa.

1879.

Alleman, Emanuel A., Milton, Pa.
Castleton, Edward L. E., cor. Market and Tremont Sts., Galveston, Texas, care Massey, Caswell & Co.
Costelo, David, 1121 Broadway, N. Y.
Curran, John P., Jr., S. E. cor. Thirteenth and Jefferson Sts., Phila., Pa.
Day, Wm. G., care W. H. Schieffelin, New York City.
Drescher, August, cor. Bowery and Brill Sts., Newark, N. J.
Fahnestock, Levi, 76 Wood St., Pittsburgh, Pa.
Frederick, John H., 543 N. Twenty-second St., Phila., Pa.
Frey, Andrew G., Lancaster, Pa.
Fruh, Ernest, N. E. cor. Camac and Oxford Sts., Phila., Pa.
Jacobs, Joe, cor. College Ave. and Clayton St., Athens, Ga.
Jungman, Emil, S. W. cor. Fourth and Noble Sts., Phila., Pa.
Jones, Roland D., M. D., 2228 Green St., Phila., Pa.
Levi, Alex. B., 21 Sutter St., San Francisco, Cal.

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*Deceased.

1879.

Lock, John H., M. D., N. W. cor Cedar and Huntingdon Sts., Phila., Pa.
Ott, Emile, S.W. cor. Fifth and Lombard Sts., Phila., Pa.
Plumer, Wm. S., Jr. 2340 Olive St., St. Louis, Mo.
Raab, Ernest P., Highland, Ill.
Rudolph, John M., N. W. cor. Tenth and Mifflin Sts., Phila., Pa.
Rush, Warren B., Gallipolis, Ohio.
Siglinger, Chas. J., S. W. cor. Norris and Memphis Streets, Phila., Pa.
Simpson, Moses S., M. D., 1414 N. Second St., Phila., Pa
Smith, Henry G., Allentown, Pa.
Sprissler, Theodore, 601 South Ninth St., Phila., Pa.
Troll, Conrad W., St. Clairville, Ohio.
Turner, Curtis W., 846 Broadway, New York City.
Vansant, Robert Hays, Trenton, N. J.
Williams, Fred'k T., S. W. cor. Thirteenth and Wood Sts., Phila., Pa.

1880.

Bassett, Fenwick H., 4406 Frankford Ave., Phila., Pa.
Beale, Chas., Glassboro, N. J.
Colton, Geo. Havens, Springfield, Mass. (care H. & J. Brewer.)
Daniels, Adam C., Union Ave., S. Pueblo, Col.
Dockstader, Wm., C., Montclair, N. J.
Ferdinand, Geo. A., Dubuque, Iowa.
Frisby, Frank, Bismarck, Dakota.
Fruh, Gustav A., N. E. cor. Camac and Oxford Sts., Phila., Pa.
Garman, Franklin S., Lykens, Pa.
Hartzell, Alfred K., Allentown, Pa.
Hoell, Conrad G., M. D., 202 Federal St., Camden, N. J.
Hoffa, John Wilson, cor. Ridge Ave. and Cedar St., Harrisburg, Pa.
Kern, James P., 3825 Powelton Ave., West Phila, Pa.
Killingbeck, Wm. J., Camden, N. J.
Klemet, John, M. D., S. W. cor. Third and Columbia Ave., Phila., Pa.
Kohlerman, John Wm., S. W. cor. Seventh and Morris Sts., Phila., Pa.
Latan, Geo., cor. Brown and Buckeye Sts., Dayton, Ohio.
Luethe, Amandus J., Milwaukee, Wis.
Madison, Joseph S., care Gulic & Co., cor. Fourth and Main Sts., Terre Haute, Ind.
Miller, Wm. Moses, Tarboro', Edgecombe Co., N. C.
Paxson, Oric Henry, M. D., Christiana, Lancaster Co., Pa.
Pechin, Wm. Jos., 608 N. Thirty-seventh St., West Phila., Pa.
Reynolds, John B., N. W. cor. Amber and Dauphin Sts., Phila., Pa.
Roberts, Chas. H., N. W. cor. Twentieth and Walnut Sts., Phila., Pa.
Ross, George R., Lebanon, Pa.
Schandein, Harry, 106 Market St., Phila., Pa.
Schimminger, Geo. W., 109 Twelfth St., Altoona, Pa.
Shelly, Jacob A., Mechanicsburg, Cumberland, Co., Pa.
Smedley, Harry L., D.D.S., M.D., Media, Pa.
Sombart, John E., M. D., Carthage, Jasper Co., Mo.
Stout, Chas. C., M. D., 876 N. Fourth St., Phila., Pa.
Strunk, Samuel Wm., East Broad Street, Quakertown, Pa.
Zeller, Chas. F., N. E. cor. Thirteenth and Walnut Sts., Phila., Pa.

1881.

Baur, Jacob, Terre Haute, Ind.
Beuter, John, Wheeling, W. Va.
Berube, Louis N., Osceola Mills, Clearfield Co., Pa.
Bernhard, Chas. H., Elgin, Ill.
Brakely, Philip F. H., Bordentown, N. J.
Bye, Charles A., 4060 Chestnut St., West Phila., Pa.
Clabaugh, Alton, Altoona, Blair Co., Pa.
Clymer, Chas. W., 2140 N. 7th St., Phila., Pa.
Cramer, Walter, Milwaukee, Wis.
Cressler, David W., Atchison. Kas.
Culler, Fred'k W., Akron, Ohio.
Douglass, Serrill, Bristol, Bucks Co., Pa.
Eberly, Frank H., N. E. cor. Seventh and Spring Garden Sts., Phila., Pa.
English, Geo. H., 5033 Germantown Ave., Phila., Pa.
Genois, Louis, 1412 Walnut St., Phila., Pa.
Gerstacker, Michael, Cleveland, O.
Goebel, Jr , Geo., care J. E. Moore, 154 Newark Ave., Jersey City, N. J.
Gorgas, Geo. A., Harrisburg, Pa.
Gossling, Thomas R., 1602 Richmond St., Phila., Pa.
Gray, John F., Milton, Pa.
Gubbins, Chas. H., N. E. cor. Fifteenth and Race Sts., Phila., Pa.
Hæssig, Herman T., Cape May, N. J.
Hahn, John H., Frankford Ave., Phila., Pa.
Halloran, Frank M., Paducah, Ky.
Hamlin, Jr., Benj. B., Harrisburg, Pa.
Harper, Henry W., Fort Worth, Texas.
Hart, Joseph, 1614 N. Second St., Phila., Pa.
Hertsch, Bernhard A., 4010 Germantown Ave., Phila., Pa.
Hinchman, Walter L., 319 N. Third St., Phila., Pa.
Hunterson, Chas. B., Camden, N. J.
Ihrig, Theodore E., Fifth Avenue, (Oakland), Pittsburgh, Pa.
Jacoby, John W., West Chester, Pa.
Jenks, Wm. E., 160 N. Third St., Phila., Pa.
Kelly, Irving W., Trenton, N. J.
Knowlton, Geo. H., 744 Elm St., Manchester, N. H.
Krauter, Chas. H., 266 W. Federal St., Youngstown, Ohio.
Kooker, J. Leedom, cor. Armat Street and Willow Avenue, Germantown, Pa.
Lascheid, Peter W., 1322 Carson St., Pittsburgh, Pa.
Lawall, Edgar J., Catasauqua, Pa.
Linden, Washington E., 414 Prospect St., Cleveland. O.
Lœhle, John F., Reading, Pa.
Love, John Henry, 528 Arch St., Phila., Pa.
Luerssen, Frank, 423 Ninth St., Washington, D. C.
Manheimer, Edward A., 90 N. East St., Indianapolis, Ind.
Manz, Constanz, Lyons, Iowa.
Mayer, Wm. C., S. E. cor. Third and George Sts., Phila., Pa.
May, Chas. Henry, Piqua, Miami Co., O.
McClintock, Wm. C., Ardmore, Pa.
Mengle, Chas. W., 1410 Chestnut St., Phila., Pa.
Meyer, Frank B., Rensselaer, Ind.
Metzger, John B., Williamsport, Pa.

1881.

Miller, Samuel W., Blockley Hospital, West Phila., Pa.
Moise, Jr., Benj. F., 17 Rutledge St., Charleston, S. C.
Morgan, Jas. H., Tenth and Poplar Sts., Wilmington, Del.
Morgan, Frank E., N. E. cor. Sixteenth and Race Sts., Phila., Pa.
Nagle, Asher C., 266 West Federal Street, Youngstown, O.
Otgen, Gustav A., Charleston, S. C.
Pape, Wm. F., Dayton, O.
Rehfuss, Emil G., M. D., 1316 S. Broad St., Phila., Pa.
Reed, David R., Asbury Park, N. J.
Reimann, George, Buffalo, N. Y.
Roland, Geo. W., Lewisburg, Union Co., Pa.
Rowe, Chas. E., cor. Lancaster Ave. and Forty-first St., Phila., Pa.
Scott, J. Harry, N. E. cor. Eighth and Montgomery Ave., Phila., Pa.
Smith, Edward W., Williamsport, Pa.
Speakman, Wm. E., Woodbury, N. J.
Spengler, John G., Dayton, O.
Strater, Henry H., 90 Erie St., Cleveland, O.
Swope, Jas. Wills, 1612 W. Ninth St., Kansas City, Mo
Tag, William, N. W. cor. Judson Place and Berks Sts., Phila. Pa.
Tyree, Josiah S., Staunton, Va.
Warner, Jr., Wm. R., 1228 Market St., Phila., Pa.
Warne, H. L., Whitewater, Wis.
Weiss, Christian, S. W. cor. Sixth and Girard Ave., Phila., Pa.
Wilson, Matthew J., M. D., 1863 N. Front St., Phila., Pa.

1882.

Acker, Chas. N., N. W. cor. Third and Spruce Sts., Phila., Pa.
Boger, Jr., Cyrus Maxwell, 3306 Market St., W. Phila., Pa.
Barkhuff, James Addison, Amsterdam, N. Y.
Bohn, Charles Henry, 2621 Girard Ave., Phila., Pa.
Clapp, Chambers Brown, Danville, Vermilion Co., Ill.
Clark, Jacob Miller, Parkersburgh, Pa.
Clemmer, Jonas Gerhard, 2209 Franklin St., Phila., Pa.
Coblentz, Virgil, Springfield, O.
Corrie, Wm. M. G., 4516 Lancaster Ave., West Phila., Pa.
Dare, Chas. Wm., Troy, Bradford Co., Pa.
De Frehn, Chas. Wm., 3950 Lancaster Ave., W. Phila., Pa.
Edwards, Howard Mell, 5033 Germantown Avenue, Germantown, Pa.
Forney, Chas. McClellan, cor. Perry and Southard Sts., Trenton, N. J.
Geiger, Jacob Franklin D., Boyertown, Pa.
Gentry, Overton Harris,, Independence, Mo.
Hayes, Robert G. H., M. D., Atlantic City, N. J.
Kohl, Emil John, Belleville, Ill.
Koser, Newton Alex., 951 Broadway, Oakland, Cal.
Kneedler, Harry Howard, S. E. cor. Fourth and Penn Sts., Reading, Pa.
Knouse, J. Hamilton, cor. North and Cowden Sts., Harrisburg, Pa.
Lambert, John Albert, 400 W. Michigan St., Indianapolis, Ind.
Lyman, David C., Paris, Ky.

1882.

Matthes, Franklin A., 24 N. Eighth St., Lebanon, Pa.
Matthews, W. Leaming, M. D., 2454 Christian St., Phila., Pa.
May, Wm. Henry, Egg Harbor City, N. J.
Mehl, Wm. Henry, 511 Miami St., Leavenworth, Kas.
Merriam, Evan B., 1412 and 1414 Walnut St., Phila., Pa.
Mullhaupt, Alfred, M. D., Pottstown, Montgomery Co., Pa.
Nixon, Wm. G., Chambersburg, Pa.
Ott, George Leonard, West End Pharmacy, Wilmington, Del.
Power, Edward Samuel, M. D., 2231 Vine St., Phila., Pa.
Rambo, Ross, S. W. cor. Eighth and Race Sts., Phila., Pa.
Raser, Geo. Prentice, 309, 311 N. Third St., Phila., Pa.
Renz, Gustav Adolph, S. E. cor. Twelfth and Spring Garden Sts., Phila., Pa.
Reuting, Theodore Wm., 8 and 10 Diamond St., Titusville, Pa.
Reynolds, Wm. Davis, Mahanoy City, Pa.
Riggs, Chas. N., S. W. cor. Eighteenth and Chestnut Sts., Phila., Pa.
Roeschel, Wm. Ernest, Carthage, Mo.
Ross, Wm. Robinson, Lebanon, Pa.
Schambs, George M., Cleveland, Ohio.
Scheible, Fred'k Chas., 78 Gont St., Mobile, Ala.
Seitz, John Geo., 43 Cherry St., Cleveland, O.
Scholl, Benjamin F., N. E. cor. Ninth and Race Sts., Phila., Pa.
Smith, Judson S., Tyrone, Pa.
Stahler, Eugene A., Bridgeport, Montgomery Co., Pa.
Steinhilber, Harry E., care Woodward, Foxon & Co., Kansas City, Mo.
Thomas, Daniel Judson, Scranton, Pa.
Thomas, Oscar Ernest (care Wm. C. Fisher), 123 Richardson St., Columbia, S. C.
Thoms, Herman E., 76 Northeast St., Indianapolis, Ind.
Way, Julius, South Seaville, N. J.
Webster, Henry, Hannibal, Mo.
Woolley, Stephen D., Asbury Park, N. J.
Woolston, Clifford M., Morristown, N. J.

1883.

Apple, Milton Shimer, 2301 N. Second St., Phila., Pa.
Armbrecht, Wm. Charles, Wheeling, W. Va.
Arnold, Charles Fred'k, Sioux City, Iowa.
Bagge, Edward Everett, S. E. cor. Broadway and Walnut Sts., Camden, N. J.
Baker, Charles Henry, 238 E. Hanover St., Trenton, N. J.
Ballentine, Allen D., 4516 Mulberry St., Frankford, Phila., Pa.
Balmer, John Henry, 3522 Germantown Ave., Phila., Pa.
Barr, Wm. Henry, Jr. (care Drake Bro.), Milwaukee, Wis.
Baumgardner, Chas. B., 1000 Seventh Ave., Altoona, Blair Co., Pa.
Benjamin, Samuel Neuman, Deckertown, N. J.
Bolton, Stephen Conklin, Watertown, N. Y., or 603 Gray's Ferry Road.
Boorse, Henry Augustus, Norristown, Pa., or Fifth and Dauphin Sts., Phila., Pa.
Booth, Fred'k Smith, 1037 Richmond St., Phila., Pa.
Boyd, Evan Garrett, New Castle, Del.
Brown, Jos. Henry, Morris, Grundy Co., Ill.

1883.

Browning, Robt. Craighead, Indianapolis, Ind.
Bruenchenheim, Byron Edwin, Milwaukee, Wis.
Butler, Geo. White, Bryn Mawr, Montgomery Co., Pa.
Campbell, Milton, 2041 Pine St., Phila., Pa.
Cheatham, Mathew Venable, Clarksville Texas.
Coleman, Mimms Wm., Selma, Ala.
Craig, Clark Rankin, Chambersburg, Pa.
Cuskaden, Albert Douglass, 1926 Atlantic Ave., Atlantic City, N. J.
Dare, John Henry, Bridgeton, N. J.
Davis, Harry Irvin, Hollidaysburg, Blair Co., Pa.
Davis, Wm. Henson, 4559 Main St., Germantown, Phila., Pa., or Jenkintown, Pa.
Deakyne, Harry Harttup, Atlantic City, N. J.
Dietrich, Howard Dickson, 1101 N. Third St., Harrisburg, Pa.
Dundor, Milton Jacob, 254 S. Ninth St., Reading, Pa.
England, Joseph Winters, 800 S. Tenth St., Phila., Pa.
Fasig, Harry Buckley, Columbia, Lancaster Co., Pa.
Fell, Edgar Burnside, cor. Sixth and Market Sts., Wilmington, Del.
Fleming, Frank Byerly, Shippensburg, Pa.
Franciscus, Wm. Chas., Lock Haven, Pa.
Frangkiser, John Fred'k, Loudonville, O.
Frey, John Peter, S. W. cor. Fifth and Susquehanna Ave., Phila., Pa.
Frey, John William, S. E. cor. Thirteenth and Montgomery Ave., Phila., Pa.
Fries, Chas. Jos. Valentine, Anoka, Minn., P. O. Box 169.
Good, Harvey Jonas Tilghman, 917 Turner St., Allentown, Pa.
Gregg, Jr., Henry Hamilton, New Lisbon, O.
Guest, Samuel Stratton, 528 Arch St., Phila., Pa.
Hahn, Gustave, Ridge Ave. and Master St., Phila., Pa.
Hannon, Owen Burdette, Shamokin, Northumberland Co., Pa.
Harris, Frank Pierce, Hamburg, Berks Co., Pa.
Harrison, Jas. Oliver, cor. Aisquith and Holland Sts., Baltimore, Md.
Hayhurst, Susan, M. D., Woman's Hospital, North College Ave. and Twenty-second St., Phila., Pa.
Helm, Jr., Gustav C. F., N. E. cor. Tenth and Spruce Sts., Phila., Pa.
Horsey, John Marshall, N. W. cor. King and Radcliffe Sts., Charleston, S. C.
Jones, Daniel R., 170 Wisconsin St., Milwaukee, Wis.
Jones, James Miles, 801 Penn St., Reading, Pa.
Johnson, Theodore Milton, Huntington, Ind.
Jungkunz, Wm. Fred'k, Freeport, Ill.
Kalmbach, Henry Geo., 1536 N. Fourth St., Phila., Pa.
Kempfer, Emil Frank, care Louis Krouse, S. W. cor. Fifth and Green Sts., Phila., Pa.
Kerr, Frank Gault, Marshall, Mo.
Kindig, Rudolph, cor. Front and Norris Sts., Phila., Pa.
Krider, James Delaplaine, 1400 Walnut St., Phila., Pa.
Lehman, Fred'k Charles, Washington St. Pharmacy, Bridesburg, Phila., Pa.
Leonhard, Louis Chas., Dayton, O.
Light, Wm. Wirt, Oregon, Ill.
MacNair, Whitmel Horne, 1900 Green Street, Phila., Pa.
McCreight, Robt., 821 Sergeant St., Phila., Pa.
Maddock, Wm. Worrell, P. O. box 215, Chester, Pa.
Miller, Harold Baughman, Memphis, Tenn.
Miller, Turner Ashby, Danville, Va.
Norcross, Alfred Black, Trenton, N. J.
O'Brien, Christopher, Conshohocken, Pa., or Norristown Insane Asylum.
Ott, Charles William, cor. Lawrence and Dauphin Sts., Phila., Pa.
Quick, Jaques Voorhees, 61 N. State Street, Chicago, Ill.
Randolph, Chas. Fitz, Altoona, Pa.
Reeser, John Wesley, cor. Thirteenth and Morris Sts., Phila., Pa.
Rickey, Chas. Frank, Mount Sterling, Ill.
Roedel, Wm. Ruthrauff, 119 Market St., Harrisburg, Pa.
Roehrig, Geo. Fred'k, 61 Bowery, cor. Canal St., New York City, N. Y.
Ruth, Wm. Augustus, Alliance, O.
Salot, Geo. Washington, care J. A. Mackimmer, 723 Fort St., West, Detroit, Mich.
Saunders, Wm. Edwin, 188 Dundas St., London, Ontario, Canada.
Scherling, Gustav, box 408, Sioux City, Iowa.
Scheffler, Jas. Samuel, Bethlehem, Pa.
Schramm, Jr., Daniel, 1428 Stiles St., Phila., Pa.
Schmidt, Flor. Joseph, Evansville, Ind.
Seeler, Andrew Jackson, 1121 Shackamaxon St., Phila., Pa.
Sellers, Albert Tobias, 1635 N. Twentieth St., Phila., Pa.
Smith, Chas. Michael, S. E. cor. Eleventh and Master Sts., Phila., Pa.
Smith, Stephen Douglass, Birdsboro', Pa.
Souder, Lewis Reed, Atlantic City, N. J.
Steacy, Frank Hernlie, care Gail & Bleckie, Palmer House, Chicago, Ill.
Trusler, Chas. Lawrence, 190 Fort Wayne St., Indianapolis, Ind.
Walter, Wm. Henry, 2339 N. Fifth St., Phila., Pa.
Weber, Geo. Washington, Millville, N. J.
Weber, Reinhard Julius, Forty-third and Silverton Avenue, West Phila., Pa.
Werst, Allen Leidig, 2458 N. Second St., Phila., Pa.
Willard, Theophilus Newton, cor. Main and Cotton Sts., Manayunk, Phila., Pa.

1884.

Alexander, Frederick Wm., 50 Franklin St., Rochester, N. Y.
Allen, Charles Spencer, Bloomsburg, N. J.
Anderson, Harry Warren, Bath, Me.
Babb, Grace Lee, Eastport, Me., or Women's Hospital, Phila., Pa.
Barber, Harry Lee, 2558 North Seventh St., Phila., Pa.
Bollman, Curtis Jacob, Mansfield, Ohio.
Boynton, Wm. Carlton, Auburn, Me.
Cassell, William E., 1008 Ridge Ave., Harrisburg, Pa.
Chandler, Isaac Eugene, Kennett Square, Chester Co., Pa.
Clayton, Abraham Theophilus, 4920 Frankford Ave., Frankford, Pa.
Cliffe, Wm. Lincoln, Kensington Avenue and Somerset St., Phila., Pa.
Coleman, John Joseph, cor. Market and Twenty-second Sts., Wheeling, W. Va.
Cook, Harry C., cor. Greenwood Ave. and N. High St., Columbus, O.
Cook, William Alexander, Americus, Ga.
Crawford, Joseph, Shannonville, Pa.
Crawford, Samuel Douglass, Nazareth, Pa.

1884.

D'Huy, Bernard H., cor. Fourteenth St. and Vermont Avenue, Washington, D. C.
Eberley, Eugene Gustav (Watertown, Wis.) N. E. cor. Seventh and Spruce Sts., Phila., Pa.
Edwards, Charles Matthew, Millington, Md., 437 North Sixth St., Phila., Pa.
Falck, Milton Smoker, State Hospital for the Insane, Danville, Pa
Falk, John Charles, 854 N. Tenth St., Phila., Pa.
Fetters, Wm. Anderson, N. E. cor. Third and Brown Sts., Phila., Pa.
Fetters, Frank Penicks, N. E. cor. Third and Brown Sts., Phila., Pa.
Finck, Robert Fechtig, 1120 Girard St., or 208 West Girard Ave , Phila., Pa.
Fitzgeorge, George Thomas, 254 Jackson St., Trenton, N. J.
Follmer, Daniel, Milton, Pa.
Gano, Wm. Hubbell, Jr., N. E. cor. Thirteenth and Walnut Sts., Phila., Pa.
Goldbach, John, Toledo, Ohio.
Harper, Robert Newton, 1412 Walnut St., Phila., Pa.
Heiberger, Eugene Samuel, Allentown, Pa.
Hillan, John Michael, St. Clair, Schuylkill Co., Pa.
Hinckley, Levi Ellsworth, Chagrin Falls, O.
Hoffman, Ephraim Zeigler, Maytown, Pa., or Cambridge, Md.
Houck, Calvin Jerome, 536 Federal St., Phila., Pa.
Houck, Oscar, La Crosse, Wis.
Ischler, George Herman, 2053 Franklin St., Phila., Pa.
Judd, James Frederick, 1825 Passyunk Ave., Phila., Pa.
Keller, George Dering, Carlisle, Pa
Keller, John William, Altoona, Blair Co., Pa.
Kinsey, Albert Henry, Galion, Ohio.
Klump, Geo. Lewis, Allentown, Pa.
Kusenberg, Louis Carl, Reading, Pa.
Kutzner, John Douty, Shamokin, Pa.
Laubach, Wm. Harrison, Jr., 1514 Arch St., Phila., Pa.
Leonard, Isaac Edward, White Haven, Pa.
Lowe, Clement Belton, N. E. cor. Ninth and Vine Sts., Philadelphia, Pa.
McCausland, James Ralston, S. W. cor. Eighteenth and Market Sts., Phila., Pa.
McConn, Wm. John, 1130 Tasker St., Phila., Pa.
McCoy, Franklin, (Belleville, Ohio,) S. E. cor. Eleventh and Master Sts., Phila., Pa.
Maddock, Geo. Frederick, Keyport, N. J.
Martin, Emlen, Rancocas, N. J.

1884.

Miller, Harry Lovett, Jr., Morris, Ill.
Maguire, Andrew Herman Joseph, S. E. cor. Eleventh and Vine Sts., Phila., Pa.
Moerk, Frank Xavier, 1236 Callowhill St., Phila., Pa.
Moore, Christian, Ardmore, Pa.
Murjahn, Louis, 2801 Girard Ave., Phila., Pa.
Murtagh, John Anthony, 156 Center St., Germantown, Phila., Pa.
Nock, Thos. Oliver, Jefferson College Hospital, Phila., Pa.
Oberholtzer, Chas. Herman, Phœnixville, Pa.
Osborne, Melmoth Mercer, S. W. cor. Eighteenth and Market St., Phila., Pa.
Pattengill, Evan Ingstrum, Elmira, N. Y.
Petrie, Edward Sing, 45 E. Mohawk St., Oswego, N. Y.
Pierce, William Chandler, 1202 King St., Wilmington, Del.
Plenge, Henry Charles, 37 Broad St., Charleston, S. C.
Pool, James Arthur, Earlville, Ill.
Reisert, William, 511 N. Eleventh St., Phila., Pa.
Rumsey, Walter Arabin, S. W. cor. Tenth and Green Sts., Phila., Pa.
Ryan, Frank Gibbs (Elmira, N. Y.), N. W. cor. Thirteenth and Market Sts., Phila., Pa.
Schroeder, Luther Johnson, Columbia, Pa., or Washington, D. C.
Schuldt, Henry Francis, 2565 Coral St., Phila., Pa.
Spangler, George Ellsworth, 2125 Arch St., Philadelphia, Pa.
Stahl, B. Franklin, N. W. cor. Thirteenth and Market Sts., Phila., Pa.
Streitz, Alexander Frederick, 1220 Davenport St., Omaha, Neb.
Sypherd, Clarence Draper, 4202 Lancaster Avenue, West Phila., Pa.
Tedford, Edward Weeks, Maryville, Tenn.
Trist, Edwin Allen, 928 South Ninth St., Phila., Pa.
Urben, Fred. Lang, 2126 Sidney St., Pittsburgh, Pa., or Camden, N. J.
Vaughan, Parry Wyche, Durham, N. C.
Watson, William Porter, Clearfield, Pa.
Weaber, John Alvin, Fredericksburg, Lebanon Co., Pa.
Weirich, George Alcimus, 2321 Ridge Ave., Phila., Pa.
Wenner, Alfred Jefferson, 346 Pine St., Camden, N. J.
Wickham, Anthony Smith, 1306 Girard Ave., Phila., Pa., or Wheeling, W. Va.
Wilson, Elmer Ellsworth, 3410 N. Eleventh St., Phila., Pa.

1830	1	1859	6	1872	16
1841	1	1860	7	1873	47
1842	1	1861	4	1874	32
1844	3	1862	14	1875	24
1845	1	1863	10	1876	43
1849	1	1864	10	1877	24
1850	1	1865	21	1878	23
1853	2	1866	23	1879	28
1854	3	1867	26	1880	33
1855	8	1868	36	1881	75
1856	2	1869	23	1882	53
1857	6	1870	20	1883	93
1858	1	1871	26	1884	85

Whole number........833

N. B.—The members will please scrutinize the above list of names *carefully*, and if any errors are noticed, or if any are known to be deceased and not marked as such, please notify the Secretary, so that a complete and correct record may be kept of the membership.

Also, if your address is not correctly given, or if any member knows the address of those marked unknown, please notify the Secretary, Wm. E. Krewson, No. 145 N. Tenth St., Philadelphia.

JUNIOR EXAMINATION.

SESSION 1883-1884.

The following were the questions given to the Junior Class at the Examination held Thursday afternoon, Feb. 14, 1884:—

RULES TO BE OBSERVED.

The answers to each branch must be written *on separate pieces of paper*, the branch specified thereon, and handed in when completed.

Commence the answer to each sub-division of the queries with a new line, and with its corresponding number.

Each paper must be headed with the name of the student, and the number of his desk.

Time allowed for writing the answers to the queries—from three until eight o'clock, P. M.

Books or written memoranda are not allowed; nor is any intercourse whatever between the candidates permitted.

The use of chemical reagents is not allowed.

Time allowed for examining specimens—fifteen minutes.

The officinal names of the specimens should be given.

Questions must be asked, and will be answered aloud, in the hearing of the entire class.

BOTANY AND MATERIA MEDICA.

PROF. JOHN M. MAISCH, Ph. D.

A.

1. *Leaves.* Describe briefly their anatomical structure (*Epidermis, Stomata, Parenchyma, Palisade Layer* and *Veins*).
2. Explain by description or diagram the general character of *Indefinite* or *Centripetal,* and of *Definite* or *Centrifugal Inflorescence.* Show how both forms are combined in the inflorescence of mint.
3. *Seeds.* Give two examples each of seeds with and without albumen. What is the origin of the tissue called albumen (*Endosperm* and *Perisperm ?*)
4. *Peppermint.* Give the botanical name and habitat of the plant. Describe it (*Stem, Branches, Leaves, Inflorescence Calyx, Corolla, Stamens, Ovary?*) How much *Volatile Oil* does it yield? What is the name of its *Stearopten ?*
5. *Coniferæ.* In what respect does the structure of the wood differ from that of *Dicotyledons?* Name several officinal drugs derived from this natural order.

CHEMISTRY.

PROF. SAMUEL P. SADTLER, Ph. D.

B.

1. What is a *Thermometer?*
   What two *Thermometer Scales* are now used in the U. S. Pharmacopœia?
   What are the fixed points on each of these, and how is the intervening space divided?
   How can you convert readings of one of these into the corresponding readings of the other?
   What are the limits of heat and cold capable of being recorded by the *Mercury Thermometer?*
2. In what several ways can *Electricity* be developed?
   Is there any difference in the character of the Electricity developed by the frictional machine, and that developed by the galvanic battery?
   Which would be used for nickel or silver plating, and which has the stronger physiological effect?
3. How is *Chlorine* made? State the materials used, and write the chemical reaction.
   How do you explain its bleaching action?
   What compounds does it form with the metals? Give the chemical formulas of one or more such compounds.
4. What is the difference between a *Sulphide*, a *Sulphite*, and a *Sulphate?* Give the chemical formula of one compound of each of these classes.
   What are the tests by which we distinguish each of these classes?
5. Write the reaction for the manufacture of *Nitric Acid*—*a*, as carried out commercially, and *b*, as made on a smaller scale.
   Give the formulas of three *Nitrates?*

PHARMACY (Theoretical and Practical).

PROF. JOSEPH P. REMINGTON, Ph. G.

C.

1. What is the specific gravity of 5 grammes of *Hydrochloric Acid?*
   What is the specific gravity of a pint of the same liquid?
   What is the weight of a litre of *Nitric Acid?*
2. Explain the effect of heat upon the principles obtained from organic substances by solution, as in tinctures, infusions, decoctions, etc.
   What relation does the strength of an extract bear to the drug from which it is made?
   Explain the difference between an *Inspissated Juice* and an *Alcoholic Extract?*
3. Why was "*Vinum Album Fortior*" introduced into the U. S. Pharmacopœia? And how is it made?
4. How many systems are recognized in *Crystallography?*
   How may the proper degree of concentration of liquids intended for crystallization be judged?
   What is *Isomorphism?*
5. How is *Spirit of Ammonia*, U. S. P. 1880, made? How is its strength indicated in the officinal definition?

COMMITTEE.

D.

1. Briefly describe and illustrate by diagram the structure of a woody *Dicotyledonous* stem.
2. What are *Molecules?*
   How do *Molecules* differ from *Atoms?*
   What difference exists between the Molecular condition of *Liquids* and *Gases?*
   What effect has heat upon the molecules of matter?
3. Describe a Barometer, and state its principle of action?
   How do the influences which cause variations in a barometer affect the ordinary boiling point of a liquid?
4. In what form is *Phosphorus* usually found in commerce?
   What precaution is necessary for its preservation?
   Describe briefly its mode of manufacture.
   Give the names and chemical formulæ of the several varieties of *Phosphoric Acid?*
5. Explain the uses of plain and plaited *Filters*, respectively.
   Describe a method of hastening the process of filtration.
   What is the best angle for the sides of a funnel to make with each other for ordinary pharmaceutical uses?

The Practical Examination took place in the forenoon of the same day, as follows:—

1. Percolate 4 oz. av. of Ground Wild Cherry Bark with one pint of water.
2. Dissolve one ounce of commercial Chloride of Ammonium in water, purify it, retain one-half of the solution, pouring it into the small bottle, leave the funnel containing the filter in the bottle, for examination.
3. Granulate the remainder of the solution, and put the product in a pasteboard box.
4. Label the receiving bottle for the percolate, the bottle containing the solution, the funnel containing the filter, and the box containing the granulated Chloride of Ammonium *with your name and number*.

The specimens for examination and recognition were as follows:—

Marubium,
Chondrus,
Maticaria,
Syrupus Tolutanus,
Tinctura Zingiberis,
Ferri Sulphas Prœcipitatus,
Unguentum Zinci Oxidi,
Magnesii Sulphas,
Potassii. Chloras,
Aqua Chlori.

SENIOR EXAMINATION.

The examination of the Senior Class commenced on Tuesday afternoon, February 28, 1884, and closed on Saturday afternoon, March 1, with the Practical Examination in Operative Pharmacy and Analytical Chemistry:—

RULES TO BE OBSERVED THROUGH THE ENTIRE EXAMINATION.

Each paper must be headed with the name of the student, and the number of his desk.

Commence the answer to each subdivision of the queries with a new line, and with its corresponding number.

Time allowed for writing the answers to the queries—from three until eight o'clock, P. M.

Books or written memoranda are not allowed; nor is any intercourse whatever between the candidates permitted.

Time allowed for examining specimens—fifteen minutes.

The officinal names of the specimens should be given.

The use of chemical reagents is not allowed.

Questions must be asked and will be answered aloud, in the hearing of the entire class.

The questions in the different branches are as follows:—

MATERIA MEDICA AND BOTANY.

Tuesday, Feb. 26, 1884.

PROF JOHN M. MAISCH, Ph. D.

A—*Canadian Hemp.* Give the botanical name, natural order, habitat and officinal part of the plant. Describe the physical and structural characters of the drug, and state how it differs from the corresponding part of an allied indigenous plant. Give the medical properties and dose of the drug.

B—*Bloodroot.* Which part is officinal? Give the botanical name, natural order, and habitat of the plant. Describe the physical and structural characters of the drug, and give its medical properties and dose. Give the important characters of one of its alkaloids, and name another officinal plant containing the same alkaloid.

C—*Logwood.* Give the botanical name, natural order, and habitat of the tree. Describe the drug, and state how it differs from other woods having similar color. Name and characterize its important constituents. Give its medical properties and dose.

D—*Willow-bark.* Give the botanical name, natural order and habitat of the tree. Describe the physical and structural characters of the drug, and state its difference from the bark of old wood. Give the outlines of a process for preparing its bitter principle; also the chemical characteristics of the latter.

E—*Senna Leaves.* From which genus and which natural order are they obtained? How does the tribe "Senna" differ from other tribes of the same genus? Name the commercial varieties; and give of each the botanical name and habitat of the plant, the principal characters of the drug and its admixtures. To which principle are the laxative properties of Senna mainly due, and what is its behavior to solvents?

F—*Colocynth.*—Give the botanical name, natural order and habitat of the plant. Describe the drug, state the cause of the plump or shrivelled appearance of the commercial varieties, and explain the growth of the placentæ. What is the percentage of seeds and pulp? Give the medical properties, dose, and effects of overdoses of the drug. Name the bitter principle, and state its behavior to hot diluted acids.

G—*Ergot.* Give the botanical name, and, as briefly as possible, the complete history of development of the fungus. What alkaloids have been obtained from Ergot? To which principles are the effects of Ergot believed to be due? Give an outline of the process for preparing these principles.

H—Give the botanical names and habitat of the plants of the natural order of Loganiaceæ yielding officinal seeds. Describe briefly the physical and structural characters of the seeds. Give the names, the percentage and the characteristic reactions of the two alkaloids found in these seeds.

I—*Benzoin.* Give the botanical name, natural order and habitat of the plant, and state how the drug is obtained. Describe the drug and point out the principal differences between Sumatra and Siam Benzoin. Name the constituents, give the percentage of the peculiar acid, and state how the presence of another acid sometimes present may be detected.

K—*Cacao Butter.* Give the botanical name, natural order and habitat of the plant; also the part of the plant yielding the oil, and the percentage obtained. Give the physical properties and constituents of the drug, and describe a test for the detection of adulteration.

Specimens (officinal names required):—

Cinchona Rubra,
Pilocarpus,
Bryonia,
Xanthoxylum,
Coriandrum,
Buchu (long),
Arnicæ Radix,
Juniperus,
Linum,
Aloe.

THEORY AND PRACTICE OF PHARMACY.

Wednesday, Feb. 27, 1884.

PROF. JOS. P. REMINGTON, Ph. G.

Write the answers to the following questions upon the blank ruled paper provided for the purpose:—

A—Identify the following liquids by a calculation, and show how you obtained the results:—1. A pint of an officinal liquid weighs 6,562 grains, what is its specific gravity, and give the officinal name of the liquid? 2. Each fluid ounce of two officinal liquids weighs 528.6 grains; give the specific gravity and officinal name of each. 3. A litre flask holds 1250 grammes of an officinal liquid; what is its specific gravity and officinal name?

B—Give the unabbreviated officinal names, ingredients, outlines of process, and describe the appearance of the following preparations of the U. S. P., 1880:—*Purified Animal Charcoal, Mustard Paper, Belladonna Plaster, Extract of Krameria, Saccharated Iodide of Iron, Solution of Arsenious Acid, Phosphorated Oil, Compound Syrup of Sarsaparilla.*

C—What changes are apt to take place in the following preparations when exposed to either air, light or summer heat? Give the best method of protecting each:—*Sucus Rubi Idæi, Potassii Carbonas, Tinctura Kino, Syrupus Ferri Iodidi, Pulvis Rhei Compositus, Magnesia Ponderosa, Pulvis Scillæ, Extractum Gossypii Radicis Fluidum.*

D—State whether the following preparations are kept better in sealed packages, or partially exposed to the air? Give reasons for your judgment, and name the best container for the dispensing counter for each preparation:—*Ergot, Rhubarb Pills, U. S. P., Taraxacum Root, Powdered Cloves, Acetate of Lead, Diachylon Ointment, Iodide of Calcium, Powdered Extract of Glycyrrhiza, Chlorinated Lime, Hydrocyanic Acid.*

E—Give the English names and ingredients used in the preparation of *Abstractum Jalapæ, Bismuthi et Ammonii Citras, Ceratum Cantharidis, Confectio Rosæ, Decoctum Sarsaparillæ Compositum, Emplastrum Ammoniaci cum Hydrargyro, Extractum Belladonnæ Alcoholicum, Linimentum Terebinthinæ, Liquor Gutta Perchæ, Mistura Rhei et Sodæ.*

F—Calculate the quantities in grains and fluid ounces that would be required of each ingredient to make five pints of *Tincture of Opium* from the officinal formula. Put all of the figures on your examination paper that you used in obtaining the answer.

G—Give the test for recognizing the *Aloins, Morphine, Quinine, Strychnine,* and *Veratrine.*

H—Describe briefly the usual accepted theory of the action of *Pepsin, Extract of Malt,* and *Pancreatin* on food. Give the sources and usual method of preparation of *Pepsin* and *Extract of Malt.*

I—Define incompatibility, as applied to prescriptions; is it ever intentional? State under what circumstances filtration may be used in compounding prescriptions. When is the pharmacist justified in making an addition to a prescription? Illustrate, by practical example, each of the above points.

K—What three physical qualities must a good pill mass possess? Why is each quality necessary? Define the term excipient. Name four excipients used in officinal pills containing aloes. Write out a prescription, using proper abbreviations, ingredients, and excipient for 24 pills each containing ¼ grain of *Permanganate of Potassium.* Write out three forms of metric prescription for a four-fluid ounce solution, containing in each teaspoonful 1-60th of a grain of *Sulphate of Strychnine,* one grain of *Sulphate of Quinine,* two grains of *Citrate of Iron and Ammonium,* and equal parts of Syrup and water.

Specimens:—(Officinal names required).

Syrupus Hyphosphitum,
Aqua Camphorae,
Extractum Gentianæ,
Tinctura Lavandulæ Composita,
Ferri Sulphas Exsiccatus.
Petrolatum.
Amylum Iodatum,
Pulvis Glycyrrhiza Compositus,
Extractum Spigelia Fluidum,
Liquor Sodæ Chloratæ,

QUESTIONS IN CHEMISTRY.

Thursday, Feb. 28, 1884.

PROF. SAMUEL P. SADTLER, Ph. D.

A—1. What two methods can you give for the manufacture of *Potassium Bromide?*
2. Explain the several chemical reactions that occur in each of these methods.
3. What are the impurities to be looked for in *Commercial Bromide of Potassium?*
4. By what tests are these impurities shown?

B—1. Give the chemical formulas for *Magnesii Sulphas* and *Zinci Sulphas* respectively.
2. State the physical differences between the two compounds, by which they may be distinguished.
3. State by what qualitative analytical tests you could distinguish between them with absolute certainty.

C—1. What is the chemical composition of *Hydrargyri Oxidum Rubrum?* Of *Hydrargyri Oxidum Flavum?*
2. What are the physical properties of the two preparations?
3. What is the chemical difference between *Hydrargyrum Chloridum Mite* and *Hydrargyrum Chloridum Corrosivum?*
4. What is the chemical composition of *Hydrargyrum Ammoniatum?*
5. How is it made?

D—1. What is "White Lead?"
2. Describe its manufacture.
3. What is its officinal name, and what are the physical and chemical properties ascribed to it by the Pharmacopœia?
4. What are its pharmaceutical and technical uses?

E—1. Give the chemical formula of *Alumen?* Of *Alumen Exsiccatum.*
2. State how the first is changed into the second, noting the limitations of temperature.
3. Give the chemical formula of *Aluminii Hydras,* and state the officinal process for preparing it.

F—1. What is *Ferrum Reductum?*
2. How is it made?
3. Write the chemical reaction for this process.
4. Give the chemical formulas of *Ferri Oxidum Hydratum?* Of *Ferri Chloridum, Ferri et Ammonii Sulphas, Ferri Oxalas?*

G—1. What is the chemical composition of *Petrolatum?*
2. How does it differ, chemically, from *Benzinum?*
3. Describe the appearance and properties of the two substances.
4. What are the pharmaceutical uses of each of these?

H—1. What is the chemical composition of both vegetable and animal fats?
2. By what several processes can fats be decomposed?
3. Write two reactions illustrating these different methods of decomposition.
4. State what the products are in the respective cases.
5. Is there any officinal process that involves the decomposition of a fat in any such way?

I—1. What is the difference between a *Phenol* and an *Aromatic Acid?*
2. To which class does *Acidum Carbolicum* belong? *Acidum Benzoicum? Acidum Salicylicum?*
3. Give the reaction for the artificial formation of this latter compound.

K—1. What is a *Glucoside?*
2. What is an *Alkaloid?*
3. What chemical reactions will serve as a means of deciding between the two classes?
4. How are *Glucosides* decomposed, and what are the products of their decomposition?

Specimens:—(Officinal names required).

Amylum,
Zinci Sulphas,
Sodii Bicarbonas,
Acidum Gallicum,
Potassii Bitartras,

Plumbi Acetas,
Acidum Aceticum,
Ammonii Chloridum,
Magnesii Sulphas,
Alcohol.

QUESTIONS BY COMMITTEE.

Friday, Feb. 29, 1884.

WM. J. JENKS, Ph. G., Chairman.

A—1. State the officinal title of *Solution Subacetate of Lead.*
2. Write out the officinal process, and give the specific gravity of the solution.
3. What precaution is necessary for its preservation, and why?
4. Name two officinal preparations into which it enters, and give the formula for the preparation of each.
5. Give the officinal definition, and a test of its purity.

B. Give the botanical name, habitat, officinal portion, important constituents and medicinal properties of one plant of each of the following natural orders:—*Ranunculaceæ, Rubiaceæ, Compositæ, Melanthaceæ, Umbelliferæ.*
(*Fill up the Table B for your answers*).

C—1. What is the officinal name of *Phosphorated Oil?*
2. What percentage of *Phosphorus* does the oil contain?
3. What fixed oil is used in its preparation?
4. Give an outline of the process directed for making it.
5. What is the object of adding the ether?
6. What is the dose of *Phosphorated Oil?*
7. What directions are given in reference to its preservation?
8. What chemical change is likely to occur if these directions are neglected?

D—1. Name the principal constituents of *Milk?*
2. State how they may be separated from each other.
3. Name an officinal *Solid* obtained from milk, and state its principal use in Pharmacy.
4. What officinal *Liquid* is derived from milk?
5. What officinal *Salt* does this liquid enter into?

E—1. Give the natural order and habitat of *Atropa Belladonna?*
2. Briefly describe the physical properties and the structural characteristics of the officinal portions of the plant.
3. Give the officinal name and chemical formula of the chief active constituent of *Belladonna?*
4. What is the largest *safe* dose of this constituent?
5. Name three other plants of the same natural order, containing nearly or quite identical principles.
6. When the active constituent of *Belladonna* is treated with dilute *Hydrochloric Acid,* what are the products of its decomposition?
7. Give the officinal name, part used, and ordinary dose of three galenical preparations of *Belladonna?*
8. To what other important drug is *Belladonna* therapeutically antagonistic?

F—Give the officinal title and definition of the following drugs; also, state the botanical name, natural order and habitat of the plants which furnish them:—*Camphor, Star-anise, Scammony, Coca, Asafœtida, Guarana, Mastic, Staves-acre, Jaborandi, Nutgall.*
(*Fill up the Table F for your answer*).

G—1. At what temperature does water attain its greatest density?
2. What is the officinal unit for comparison of the densities of solid and liquid bodies?
3. What is the weight in *grams* of a dicilitre of officinal *Nitric Acid?*
4. What is the weight in *grains* of a litre of officinal *Ether?*
5. What is that officinal liquid, half a litre of which weighs 1050 *grams?*

H—1. Give the officinal name, specific gravity, and symbol of *Mercury ?*
2. Name some of the localities from which it is obtained, and state in what combination it usually exists in nature.
3. What process is generally employed in separating it from this combination?
4. Give both the boiling point and congealing point of *Mercury, F.*
5. What two series of salts are formed by *Mercury ?*
6. To which series does *Corrosive Sublimate* belong? State its dose and chemical formula, and give a test for it in solution.
7. To which series does *Calomel* belong? Give its chemical formula.
8. Name three officinal preparations into which *Mercury* enters in the metallic state.

I—1. State the commercial methods used in the preparation of *Starch ?*
2. Into what is it converted when boiled with dilute acids?
3. Give the chemical formula of *Starch*, and its test.
4. What is the chemical formula of *Glucose ?*
5. Give a test for it.
6. How does it differ, chemically, from Cane Sugar?
7. Describe the chemical reaction that takes place when Glucose is subjected to fermentation.
8. Give the officinal name of the principal product formed.

K—1. ℞

Atropinæ Sulphatis	gr. ii
Aquæ Destillatæ	f ℥ii

Fiat solutio.
Signa :—Take a teaspoonful every four hours.
Would you dispense this prescription? Give your reason why.

2. ℞

For Mr. Hayes' infant.

Bismuthi Subnitratis	ʒi
Misturæ Cretæ	f ℥iss
Tincturæ Opii	f ℥ss

Misce, signa :—Give a teaspoonful every four hours.
Would you dispense this prescription? Give your reason why.

3. ℞

Arsenii Iodidi	gr. iv
Hydrarg. Iodidi Viridis	gr. viii
Ferri Iodidi	gr. xxxii
Misce, fiant Pilulæ No	xxxii

Signa :—Take one pill three times a day.
Would you dispense this prescription? Give your reason why.

4. ℞

Acidi Hydrochlorici	gtt xv
Potassii Chloratis	ʒiss
Aquæ Cinnamomi	f ℥iv

Signa :—Take a teaspoonful every hour.
How would you prepare this prescription? State the chemical action occurring, and give the reason for each step in the process.

5. ℞

Morphinæ Sulphatis	gr. ii
Tincturæ Tolutanæ	f ℥ss
Aquæ	f ℥iiiss

Misce et signa :—For cough. Take a teaspoonful every four hours.
Write out a direction for preparing this prescription, and give your reason for so doing.

6. ℞

Olei Sabinæ	m xx
Pulveris Aloes	gr. v
Misce, fiant Pilulæ No	xx

Signa :—Take one pill three times a day.
Write out a direction for preparing this prescription, and give your reason for so doing.

Specimens (Officinal names required).

Aqua Menthæ Piperitæ,
Acetum Scillæ,
Syrupus Pruni Virginanœ,
Podophyllum,
Scilla,

Buchu (short),
Anisum,
Potassii Nitras,
Sodii Boras,
Zinci Sulphas.

PRACTICAL EXAMINATION OPERATIVE PHARMACY

Saturday, March 1, 1884.

Time allowed, two hours.

SUPPOSITORIES.

1. ℞

Ext. Stramonii.
Acidi Tannici āā gr. vj.
Ol. Theobromæ gr. c.
Make six Suppositories.

LOZENGES.

2.

Pulv. Ext. Glycyrrh.	gr. xcvi.
Pulv. Acaciæ,	gr. xlviij.
Pulv. Sacch. Alb.	gr. lxxij.
Ol. Sassafras,	gtt. ij
Oleores. Cubebæ,	gtt. vj.
Syr. Tolu. q. s.	

Make 12 lozenges.

EMULSION.

3. Make four fluid ounces of an emulsion containing one fluid ounce oil of turpentine, with the proper quantity of gum and water.

PILLS.

4. ℞

Sodii. Carb.	gr. xv.
Ferri Sulph.	gr. xv.
Pulv. Myrrhæ,	gr. xxx.
Syr. Tolu. q. s.	

Make a mass, and divide it into twenty pills.

PLASTER.

5. Spread a 6x4 Soap plaster.

Examination in Analytical Chemistry followed the above. Each candidate was furnished with a solution containing three or four Salts, and was required to search for both bases and acids within two hours, as follows :—

SCHEME FOR THE SEPARATION OF THE MORE COMMONLY OCCURRING BASES, WHEN FOUND IN SOLUTION.

<table>
<tr><td colspan="13">Add hydrochloric acid and filter.</td></tr>
<tr><td colspan="3">Precipitate
Hg(ous) Pb Ag.
Wash, boil with water, filter.</td><td colspan="10">Filtrate
Cu Hg(ic) Pb As Sb Fe Al Zn Ba Ca Mg K Na Am.
Pass H_2S through the liquid until it ceases to cause any alteration; filter.</td></tr>
<tr><td colspan="2">Precipitate
Hg(ous) Ag.
Add AmHO.</td><td rowspan="4">Filtrate
Pb
Add H_2SO_4; white precipitate.</td><td colspan="3">Precipitate
Cu Hg(ic) Pb As Sb.
Wash, digest in AmHS, filter.</td><td colspan="7">Filtrate
Fe Al Zn Ba Ca Mg K Na Am.
Add AmHO, AmHS, and filter.</td></tr>
<tr><td rowspan="3">Precip.
Hg(ous)
Black precipitate.</td><td rowspan="3">Filtrate
Ag.
Add HNO_3; white precipitate.</td><td rowspan="3">Precipitate
Cu Hg(ic).
Wash, dissolve in a few drops of HNO_3 and HCl; evap. nearly to dryness; redissolve in H_2O, divide into three and test for Cu by AmHO; blue solution. Hg by Cu; globules. Pb by H_2SO_4; white precip.</td><td colspan="2">Filtrate
As Sb.
Add $HC_2H_3O_2$, and boil; digest the precipitate in strong HCl; boil, dilute, filter.</td><td colspan="3">Precipitate
Fe Al Zn.
Wash, dissolve in HCl, boil (with a few drops of HNO_3 if necessary); add KHO, stir, filter.</td><td colspan="4">Filtrate
Ba Ca Mg K Na Am,
Add Am_2CO_3; boil, filter.</td></tr>
<tr><td>Precip.
As.
Yellow.</td><td>Filtrate
Sb.
Add H_2S
Orange precipitate.</td><td rowspan="2">Precipitate
Fe.
? Ferric or Ferrous. Test, original solution by yellow and red prussiate.</td><td colspan="2">Filtrate
Al Zn.
Neutralize by HCl; add AmHO, stir, filter.</td><td colspan="2">Precipitate
Ba Ca.
Wash, dissolve in $HC_2H_3O_2$, boil; add K_2CrO_4, filter.</td><td colspan="2">Filtrate
Mg K Na Am.
Add Am_2HAsO_4; stir, filter.</td></tr>
<tr><td colspan="2">Confirm by testing original solution by the H tests.</td><td>Precipitate
Al.
White precipitate.</td><td>Filtrate
Zn.
Add AmHS; white precipitate.</td><td>Precip.
Ba.
Yellow.</td><td>Filtrate
Ca.
Add $Am_2C_2O_4$; white precipitate.</td><td>Precip.
Mg.
White.</td><td>Filtrate
K Na Am.
Evap., ignite, dissolve in H_2O, and test for K by $PtCl_4$; yellow precipitate. Na by flame; yellow. Am in orig. sol. by NaHO.</td></tr>
</table>

QUIZZES.

The Quizzes, under the auspices of the Alumni Association, will be held during the course of 1884–'85, on every Thursday afternoon, in the Alumni room. The Quiz for the Senior Students from 3 to 5, and for the Junior 2 to 3 P. M. The price of the Senior tickets for the two hours' Quiz are $10.00, and upon graduation, the certificate of membership will be presented, thereby making the member of the Senior Quiz Class, when he graduates, an Active member of the Association without further cost.

The attention of students is earnestly called to the above, as conducted by the Alumni Association. There may be some who do not appreciate the objects and advantages of them, and to such a few words will not be misdirected in this place. They are in no wise antagonistic to those conducted by the College itself. The Alumni Association is composed almost exclusively, not merely of graduates, but of practical pharmacists and chemists, whose lives are spent in the pursuit of these branches of knowledge as a means of gaining their livelihood. It inevitably follows, therefore, that they are *practical*, eminently so. Herein lies their great advantage—the Quiz Masters bring out prominently those parts which their every-day experience teaches them are of most practical value. The student's life as such does not close with the receipt of his diploma; *then* he is only just fitted to study properly, to profit by experience, to correctly observe and discriminate between facts; and the more study and experience he gets, the better for him as a practical pharmacist.

It must not be understood, from the above remarks, that these Quizzes are not directed toward preparing students for their examinations. On the contrary, the preceding lectures as delivered by the Professors are reviewed, and the salient points brought out, and the student, in addition, receives something more to take with him, and serve as a guide with which to direct future effort. It is hoped that students will avail themselves of this opportunity of receiving thorough quizzing, and thereby also aid the Association to still further carry on its work to their advantage and the benefit of the student.

Those who have been members of the Alumni Quizzes during the past three years, can testify to their advantage to the student.

The hours of holding the Quizzes are subject to change to suit the convenience of the majority of the class.

For further particulars, address Wm. E. Krewson, Secretary, at the College, No. 145 N. Tenth street, or 1801 N. Eighth street.

MICROSCOPY.

In the past year the Association has started a class for the microscopical examination of drugs. The application of the microscope to practical use in pharmaceutical study is becoming more and more general, and is recognized by the highest authorities as one of the essentials. The externals of drugs are no longer sufficient for their identification and correct study. With the large number of new ones constantly being brought forward, and the general sophistication of all in use, so many of which are externally very similar, the microscope is the pharmacist's friend in need. It is intended to teach the most approved methods of microscopical manipulations and investigations; also the preparing and mounting of different classes of objects.

The Class in Microscopy will meet on Fridays during the Course of Lectures, from 2 to 4 P. M., and will be under the care of Mr. A. P. Brown, Ph. G., a practical microscopist.

The course will consist of twelve or fifteen practical lessons, as follows:—

Microscopical Manipulations, Drawing with Camera Lucida, Urinary Analysis, Quantitative and Qualitative, Section Cutting, Double Staining, Dry and Wet Mounts, Photo-Micography, Detection of Adulterations, Finishing Slides, etc.

Price of Tickets, $10.00 for the course.

For further information, address the Secretary, at College, No. 145 N. Tenth street.

ALUMNI PRIZES.

The Gold Medal to the best student of the Graduating Class.

Certificates for excellence in the studies of Chemistry, Pharmacy, Materia Medica and Pharmaceutical Manipulation and General Pharmacy.

Also, a Testimonial to the best student of the Junior Examination.

A prize for Botany will be given at the Social Meeting, in January, for the best collection of plants correctly analyzed and gathered during the coming Spring and Summer months.

IMPORTANT NOTICE.

Any one wishing to purchase back numbers of the Alumni Reports for the purpose of completing the full set, can do so by applying to the Secretary, Wm. E. Krewson, N. E. cor. Eighth and Montgomery Ave. Also, extra copies of this Report. Price, 15 cents each. Those sending by mail should enclose *stamps* for postage. The money thus received is to be used for reprinting any of the Reports that may become exhausted.

ALUMNI CALENDAR FOR 1884-'85.

Thursday, May 1, 1884, First Meeting of the Executive Board.
Thursday, Aug. 7, 1884, Second Meeting of the Executive Board.
Tuesday, October 7, 1884, First Social Meeting.
Thursday, Nov. 6th, 1884, Third Meeting of the Executive Board.
Tuesday, Nov. 11, 1884, Second Social Meeting.
Tuesday, December 9, 1884, Third Social Meeting.
Tuesday, January 13, 1885, Fourth Social Meeting.
Thursday, February 5th, 1885, Fourth Meeting of the Executive Board.
Tuesday, February 10th, 1885, Fifth and last Social Meeting.
Wednesday, March 18, 1885, Twentieth Annual Meeting of the Association, and Annual Reception to Graduating Class.

Senior and Junior Quizzes every Thursday afternoon, commencing October 9, 1884, and ending February 26, 1885.

Course in Microscopy begins Friday, October 10, 1884.

Spring Course in Microscopy commences Friday, April 3, 1885.

Introductory Lecture to the Course of 1884–'85, Wednesday, Oct. 1st, 1884.

Sixty-fourth Annual Commencement, Friday, March 20, 1885.

NOTICE.

It is the desire of the officers of the Alumni Association that each member receives a copy of the Annual Reports from year to year. It is therefore hoped that each member will inform the Secretary by postal when he receives this number.

EXCURSION

Of Alumni Association, to Woodland Beach, Tuesday, July 15th, 1884. Tickets, 50 cents.

ADVERTISEMENTS.

CONTENTS

CONTENTS.

	PAGE
Addresses.—Annual	22–32
“ Cocaine	124–128
“ Diet and Drink	97–108
“ Hay Fever and its Treatment	75–85
“ How to Experiment in Natural Philosophy	128–130
“ How to Think	90–97
“ Introductory, John M. Maisch, Phar. D	137–141
“ On Chlorophyll	130–132
“ President’s Annual	4–7
“ The Germ Theory of Disease	114–121
“ Valedictory, Prof. Saml. P. Sadtler	142–145
“ What is the Best Way to Wait on a Customer	110–114
Alumni Association	158
“ Calendar	141
“ Prizes	188
Annual Meeting, Proceedings of	3–19
“ Reception	20
Auditing Committee	15
Applications for Membership	47
Appointment of Delegates to the American Pharmaceutical Association	52
“ of Quiz Masters	55
Amendment to By-Laws	18–19
Commencement Exercises	146–152
Class History	37
“ Oration	35
Concluding Remarks	41–44
Committee on case of David R. Reed	16
Committee on Deceased Members	17
Certificates.—Analytical Chemistry	34
“ Chemistry	33
“ for the Best Collection and Preservation of Indigenous Plants in Inflorescence	36–37
“ General Pharmacy	34
“ Materia Medica	32
“ Operative Pharmacy	33
“ Proficiency in Pharmacy	33
“ to Junior Student	40
Death of Members since Annual Meeting	161
Excursion	155
Gold Medal, list of those receiving it	44
“ Presentation of	21
Graduating Class	162–164
Graduates, Death of	158
“ Who have joined the Association since Annual Meeting	11–12
Important Notice	19, 145
Junior Examination	178–181
Letters from old Graduates	160–161

PAGE

Members, Active 167–177
" " by resolution 165–166
" " List of deceased 156–158
Microscopy 187–188
" List of Classes who took instruction in 159–160
Minutes of the Executive Board 45–66
" " " " first regular meeting 45–48
" " " " first adjourned regular meeting 48–50
" " " " second regular meeting 50–54
" " ' " third regular meeting 55–60
" " " " fourth regular meeting 60–66
Minutes of the Social Meetings 67–132
" " " " first 67–68
" " " " second 68–70
" " " " third 70–72
" " " " fourth 72–73
" " " " fifth 73–74
" " Sixth Annual Meeting of the Zeta Phi Alpha Chapter 153–155
Notice 155
Obituaries 132–136
Officers, Roll of 2
" Election of 15
" Zeta Phi Alpha 154
Preliminary Remarks 74
Presidents of the Association 19
Quizzes 187
" List of Students who took the 159
Report of the Secretary 8–10
" " Committee on Anniversary 49
" " Committee on Memorial Tablet 17
" " Committee on Publishing the Twentieth Annual Report 46
" " Committee on Reception and the Distribution of Alumni Prizes 45–46
" " Delegates to the American Pharmaceutical Association 86–90
" " Nominating Committee 12–13
" " Secretary on Twentieth Annual Report 50
" " Special Committee on Botanical Prize 16–17
" " Treasurer 14
Supper, Faculty's Annual 150–152
Sketch of Edward C. Jones 152
Senior Examination 181–186
Secretaries of the Association 66
Treasurers of the Association 66

ADVERTISEMENTS.

PAGE
Ashenbach & Miller ... xviii
Brown, Ferderick ... ii
Bullock & Crenshaw ... vii
Burk & Co., Wm. B ... xix
Burk & McFetridge ... Facing xviii
French & Co., Samuel H ... x
Genois, Louis ... xxiii
Gillam's Sons ... v
Green & Co ... xvi
Hance Brothers & White ... v
Houghton & Co., E. F ... xiv
Jones & Co., Jesse ... xxiii
Jones & Co., Edward C ... xxii
Lippincott & Co., Chas ... xi
Lucas & Co., John ... xx
Maris & Co., John M ... xiii
Mellor & Rittenhouse ... xix
Morgan, Cyrus R ... xx
M'Cool, T. H ... ix
Philadelphia Truss Co ... xxiv
Powers & Weightman ... xvii
Queen & Co., James W ... xv
Remington, Joseph P ... iv
Rosengarten & Sons ... xii
Shoemaker & Co., Robert ... xxi
Snowden, William ... xxii
Troemner, Henry ... ix
Warner & Co., Wm. R ... i
Weaver & Schandein ... iii
Whitall, Tatum & Co ... vi
Wiley & Harris ... viii
Wirz, A. H ... xv
Zentmayer, Joseph ... xviii